SEQUENCE LISTING

<110> Walke, D. Wade
Wang, Xiaoming
Scoville, John
Turner, C. Alexander Jr.

<120> Novel Human Semaphorin Homologs and Polynucleotides Encoding the Same

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<151> 2000-05-18

<150> US 60/208,893
<151> 2000-06-02

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Gln Asn Tyr Val Arg Val Leu Ile Val Ala Gly Arg Lys Val Phe Met
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Cys Gly Thr Asn Ala Phe Ser Pro Met Cys Thr Ser Arg Gln Val Gly
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Leu Tyr Ala Ala Thr Val Ile Asp Phe Ser Gly Arg Asp Pro Ala Ile
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Ser Cys Leu Cys Arg Ala Arg Ser Cys Asp Ser Pro Arg Pro Arg Cys
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Arg Asn Gly Ala Trp Thr Pro Trp Ser Ser Trp Ala Leu Cys Ser Thr
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Arg Phe Cys Asn Glu Asn Thr Pro Cys Pro Val Pro Ile Phe Trp Ala
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725 730 735
Glu Asp Leu Leu Arg Ser Gly Ser Thr Ser Pro His Thr Val Ser Gly
740 745 750
Gly Trp Ala Ala Trp Gly Pro Trp Ser Ser Cys Ser Arg Asp Cys Glu
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Gln Ser Arg Ser Arg His Cys Glu Glu Leu Leu Pro Gly Ser Ser Ala
885 890 895
Cys Ala Gly Asn Ser Ser Gln Ser Arg Pro Cys Pro Tyr Ser Glu Ile
900 905 910
Pro Val Ile Leu Pro Ala Ser Ser Met Glu Glu Ala Thr Gly Cys Ala
915 920 925
Gly Phe Asn Leu Ile His Leu Val Ala Thr Gly Ile Ser Cys Phe Leu
930 935 940
Gly Ser Gly Leu Leu Thr Leu Ala Val Tyr Leu Ser Cys Gln His Cys
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Gln Arg Gln Ser Gln Glu Ser Thr Leu Val His Pro Ala Thr Pro Asn
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His Leu His Tyr Lys Gly Gly Gly Thr Pro Lys Asn Glu Lys Tyr Thr
980 985 990
Pro Met Glu Phe Lys Thr Leu Asn Lys Asn Asn Leu Ile Pro Asp Asp
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Arg Ala Asn Phe Tyr Pro Leu Gln Gln Thr Asn Val Tyr Thr Thr Thr
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Ile Val Gly Ala Arg Asn Tyr Leu Phe Arg Leu Ser Leu Ala Asn Val
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Pro Tyr Cys Gly Trp Asp Gly Lys Gln Gln Arg Cys Ser Thr Leu Glu
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Gln Pro Cys Glu His Leu Asp Gly Asp Asn Ser Gly Ser Cys Leu Cys
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Arg Ala Cys Glu Asn Gly Asn Ser Cys Leu Gly Cys Gly Val Glu Phe
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Lys Thr Cys Asn Pro Glu Gly Cys Pro Glu Val Arg Arg Asn Thr Pro
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Gly Leu Gln Phe Gly Arg Arg Arg Thr Glu Thr Arg Thr Cys Pro Ala
755 760 765
Asp Gly Ser Gly Ser Cys Asp Thr Asp Ala Leu Val Glu Asp Leu Leu
770 775 780
Arg Ser Gly Ser Thr Ser Pro His Thr Val Ser Gly Gly Trp Ala Ala
785 790 795 800
Trp Gly Pro Trp Ser Ser Cys Ser Arg Asp Cys Glu Leu Gly Phe Arg
805 810 815
Val Arg Lys Arg Thr Cys Thr Asn Pro Glu Pro Arg Asn Gly Gly Leu
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Pro Cys Val Gly Asp Ala Ala Glu Tyr Gln Asp Cys Asn Pro Gln Ala
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Glu Glu Ala Leu Cys Ala Thr Gln Ala Cys Pro Glu Gly Trp Ser Pro
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Trp Ser Glu Trp Ser Lys Cys Thr Asp Asp Gly Ala Gln Ser Arg Ser
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Arg His Cys Glu Glu Leu Leu Pro Gly Ser Ser Ala Cys Ala Gly Asn
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Leu Thr Leu Ala Val Tyr Leu Ser Cys Gln His Cys Gln Arg Gln Ser
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Gln Glu Ser Thr Leu Val His Pro Ala Thr Pro Asn His Leu His Tyr
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Lys Gly Gly Gly Thr Pro Lys Asn Glu Lys Tyr Thr Pro Met Glu Phe
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Lys Thr Leu Asn Lys Asn Asn Leu Ile Pro Asp Asp Arg Ala Asn Phe
                1045                1050                1055
Tyr Pro Leu Gln Gln Thr Asn Val Tyr Thr Thr Thr Tyr Tyr Pro Ser
            1060                1065                1070
Pro Leu Asn Lys His Ser Phe Arg Pro Glu Ala Ser Pro Gly Gln Arg
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Cys Phe Pro Asn Ser
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<210> 5
<211> 3105
<212> DNA
<213> homo sapiens

<400> 5

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cagaactacg tgcgagtcct gatcgtcgcc ggccggaagg tgttcatgtg tggaaccaat     300
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atcaatggtg tggcccgctg cccctatgac ccacgccaca actccacagc tgtcatctcc     420
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tttcgctacc aggagaaccc cagggctgcc tggctcccca tagccaaccc catccccaat     960
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cagcagacca atgtgtacac gactacttac tacccaagcc ccctgaacaa acacagcttc    3060
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<210> 6
<211> 1034
<212> PRT
<213> homo sapiens

<400> 6

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            20                  25                  30
Gly Asn Gln Leu Ile Val Gly Ala Arg Asn Tyr Leu Phe Arg Leu Ser
        35                  40                  45
Leu Ala Asn Val Ser Leu Leu Gln Ala Thr Glu Trp Ala Ser Ser Glu
    50                  55                  60
Asp Thr Arg Arg Ser Cys Gln Ser Lys Gly Lys Thr Glu Glu Glu Cys
65                  70                  75                  80
Gln Asn Tyr Val Arg Val Leu Ile Val Ala Gly Arg Lys Val Phe Met
                85                  90                  95
Cys Gly Thr Asn Ala Phe Ser Pro Met Cys Thr Ser Arg Gln Val Gly
            100                 105                 110
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Asn Leu Ser Arg Thr Ile Glu Lys Ile Asn Gly Val Ala Arg Cys Pro
        115                 120                 125
Tyr Asp Pro Arg His Asn Ser Thr Ala Val Ile Ser Ser Gln Gly Glu
    130                 135                 140
Leu Tyr Ala Ala Thr Val Ile Asp Phe Ser Gly Arg Asp Pro Ala Ile
145                 150                 155                 160
Tyr Arg Ser Leu Gly Ser Gly Pro Pro Leu Arg Thr Ala Gln Tyr Asn
                165                 170                 175
Ser Lys Trp Leu Asn Glu Pro Asn Phe Val Ala Ala Tyr Asp Ile Gly
            180                 185                 190
Leu Phe Ala Tyr Phe Phe Leu Arg Glu Asn Ala Val Glu His Asp Cys
        195                 200                 205
Gly Arg Thr Val Tyr Ser Arg Val Ala Arg Val Cys Lys Asn Asp Val
    210                 215                 220
Gly Gly Arg Phe Leu Leu Glu Asp Thr Trp Thr Thr Phe Met Lys Ala
225                 230                 235                 240
Arg Leu Asn Cys Ser Arg Pro Gly Glu Val Pro Phe Tyr Tyr Asn Glu
                245                 250                 255
Leu Gln Ser Ala Phe His Leu Pro Glu Gln Asp Leu Ile Tyr Gly Val
            260                 265                 270
Phe Thr Thr Asn Val Asn Ser Ile Ala Ala Ser Ala Val Cys Ala Phe
        275                 280                 285
Asn Leu Ser Ala Ile Ser Gln Ala Phe Asn Gly Pro Phe Arg Tyr Gln
    290                 295                 300
Glu Asn Pro Arg Ala Ala Trp Leu Pro Ile Ala Asn Pro Ile Pro Asn
305                 310                 315                 320
Phe Gln Cys Gly Thr Leu Pro Glu Thr Gly Pro Asn Glu Asn Leu Thr
                325                 330                 335
Glu Arg Ser Leu Gln Asp Ala Gln Arg Leu Phe Leu Met Ser Glu Ala
            340                 345                 350
Val Gln Pro Val Thr Pro Glu Pro Cys Val Thr Gln Asp Ser Val Arg
        355                 360                 365
Phe Ser His Leu Val Val Asp Leu Val Gln Ala Lys Asp Thr Leu Tyr
    370                 375                 380
His Val Leu Tyr Ile Gly Thr Glu Ser Gly Thr Ile Leu Lys Ala Leu
385                 390                 395                 400
Ser Thr Ala Ser Arg Ser Leu His Gly Cys Tyr Leu Glu Glu Leu His
                405                 410                 415
Val Leu Pro Pro Gly Arg Arg Glu Pro Leu Arg Ser Leu Arg Ile Leu
            420                 425                 430
His Ser Ala Arg Ala Leu Phe Val Gly Leu Arg Asp Gly Val Leu Arg
        435                 440                 445
Val Pro Leu Glu Arg Cys Ala Ala Tyr Arg Ser Gln Gly Ala Cys Leu
    450                 455                 460
Gly Ala Arg Asp Pro Tyr Cys Gly Trp Asp Gly Lys Gln Gln Arg Cys
465                 470                 475                 480
Ser Thr Leu Glu Asp Ser Ser Asn Met Ser Leu Trp Thr Gln Asn Ile
                485                 490                 495
Thr Ala Cys Pro Val Arg Asn Val Thr Arg Asp Gly Gly Phe Gly Pro
            500                 505                 510
Trp Ser Pro Trp Gln Pro Cys Glu His Leu Asp Gly Asp Asn Ser Gly
        515                 520                 525
Ser Cys Leu Cys Arg Ala Arg Ser Cys Asp Ser Pro Arg Pro Arg Cys
    530                 535                 540
Gly Gly Leu Asp Cys Leu Gly Pro Ala Ile His Ile Ala Asn Cys Ser
545                 550                 555                 560
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Arg Asn Gly Ala Trp Thr Pro Trp Ser Ser Trp Ala Leu Cys Ser Thr
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580 585 590
Ala Pro Arg His Gly Gly Arg Ile Cys Val Gly Lys Ser Arg Glu Glu
595 600 605
Arg Phe Cys Asn Glu Asn Thr Pro Cys Pro Val Pro Ile Phe Trp Ala
610 615 620
Ser Trp Gly Ser Trp Ser Lys Cys Ser Ser Asn Cys Gly Gly Gly Met
625 630 635 640
Gln Ser Arg Arg Arg Ala Cys Glu Asn Gly Asn Ser Cys Leu Gly Cys
645 650 655
Gly Val Glu Phe Lys Thr Cys Asn Pro Glu Gly Cys Pro Glu Val Arg
660 665 670
Arg Asn Thr Pro Trp Thr Pro Trp Leu Pro Val Asn Val Thr Gln Gly
675 680 685
Gly Ala Arg Gln Glu Gln Arg Phe Arg Phe Thr Cys Arg Ala Pro Leu
690 695 700
Ala Asp Pro His Gly Leu Gln Phe Gly Arg Arg Arg Thr Glu Thr Arg
705 710 715 720
Thr Cys Pro Ala Asp Gly Ser Gly Ser Cys Asp Thr Asp Ala Leu Val
725 730 735
Glu Asp Leu Leu Arg Ser Gly Ser Thr Ser Pro His Thr Val Ser Gly
740 745 750
Gly Trp Ala Ala Trp Gly Pro Trp Ser Ser Cys Ser Arg Asp Cys Glu
755 760 765
Leu Gly Phe Arg Val Arg Lys Arg Thr Cys Thr Asn Pro Glu Pro Arg
770 775 780
Asn Gly Gly Leu Pro Cys Val Gly Asp Ala Ala Glu Tyr Gln Asp Cys
785 790 795 800
Asn Pro Gln Ala Cys Pro Val Arg Gly Ala Trp Ser Cys Trp Thr Ser
805 810 815
Trp Ser Pro Cys Ser Ala Ser Cys Gly Gly Gly His Tyr Gln Arg Thr
820 825 830
Arg Ser Cys Thr Ser Pro Ala Pro Ser Pro Gly Glu Asp Ile Cys Leu
835 840 845
Gly Leu His Thr Glu Glu Ala Leu Cys Ala Thr Gln Ala Cys Pro Glu
850 855 860
Gly Trp Ser Pro Trp Ser Glu Trp Ser Lys Cys Thr Asp Asp Gly Ala
865 870 875 880
Gln Ser Arg Ser Arg His Cys Glu Glu Leu Leu Pro Gly Ser Ser Ala
885 890 895
Cys Ala Gly Asn Ser Ser Gln Ser Arg Pro Cys Pro Tyr Ser Glu Ile
900 905 910
Pro Gly Phe Asn Leu Ile His Leu Val Ala Thr Gly Ile Ser Cys Phe
915 920 925
Leu Gly Ser Gly Leu Leu Thr Leu Ala Val Tyr Leu Ser Cys Gln His
930 935 940
Cys Gln Arg Gln Ser Gln Glu Ser Thr Leu Val His Pro Ala Thr Pro
945 950 955 960
Asn His Leu His Tyr Lys Gly Gly Gly Thr Pro Lys Asn Glu Lys Tyr
965 970 975
Thr Pro Met Glu Phe Lys Thr Leu Asn Lys Asn Asn Leu Ile Pro Asp
980 985 990
Asp Arg Ala Asn Phe Tyr Pro Leu Gln Gln Thr Asn Val Tyr Thr Thr
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Thr Tyr Tyr Pro Ser Pro Leu Asn Lys His Ser Phe Arg Pro Glu Ala
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Ser Pro Gly Gln Arg Cys Phe Pro Asn Ser
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<212> DNA
<213> homo sapiens

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<212> PRT
<213> homo sapiens

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35 40 45
Ala Phe Glu Asp Leu Gln Pro Trp Val Ser Asn Phe Thr Tyr Pro Gly
50 55 60
Ala Arg Asp Phe Ser Gln Leu Ala Leu Asp Pro Ser Gly Asn Gln Leu
65 70 75 80
Ile Val Gly Ala Arg Asn Tyr Leu Phe Arg Leu Ser Leu Ala Asn Val
85 90 95
Ser Leu Leu Gln Ala Thr Glu Trp Ala Ser Ser Glu Asp Thr Arg Arg
100 105 110
Ser Cys Gln Ser Lys Gly Lys Thr Glu Glu Glu Cys Gln Asn Tyr Val
115 120 125
Arg Val Leu Ile Val Ala Gly Arg Lys Val Phe Met Cys Gly Thr Asn
130 135 140
Ala Phe Ser Pro Met Cys Thr Ser Arg Gln Val Gly Asn Leu Ser Arg
145 150 155 160
Thr Ile Glu Lys Ile Asn Gly Val Ala Arg Cys Pro Tyr Asp Pro Arg
165 170 175
His Asn Ser Thr Ala Val Ile Ser Ser Gln Gly Glu Leu Tyr Ala Ala
180 185 190
Thr Val Ile Asp Phe Ser Gly Arg Asp Pro Ala Ile Tyr Arg Ser Leu
195 200 205
Gly Ser Gly Pro Pro Leu Arg Thr Ala Gln Tyr Asn Ser Lys Trp Leu
210 215 220
Asn Glu Pro Asn Phe Val Ala Ala Tyr Asp Ile Gly Leu Phe Ala Tyr
225 230 235 240
Phe Phe Leu Arg Glu Asn Ala Val Glu His Asp Cys Gly Arg Thr Val
245 250 255
Tyr Ser Arg Val Ala Arg Val Cys Lys Asn Asp Val Gly Gly Arg Phe
260 265 270
Leu Leu Glu Asp Thr Trp Thr Thr Phe Met Lys Ala Arg Leu Asn Cys
275 280 285
Ser Arg Pro Gly Glu Val Pro Phe Tyr Tyr Asn Glu Leu Gln Ser Ala
290 295 300
Phe His Leu Pro Glu Gln Asp Leu Ile Tyr Gly Val Phe Thr Thr Asn
305 310 315 320

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Val Asn Ser Ile Ala Ala Ser Ala Val Cys Ala Phe Asn Leu Ser Ala
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Ile Ser Gln Ala Phe Asn Gly Pro Phe Arg Tyr Gln Glu Asn Pro Arg
            340                 345                 350
Ala Ala Trp Leu Pro Ile Ala Asn Pro Ile Pro Asn Phe Gln Cys Gly
        355                 360                 365
Thr Leu Pro Glu Thr Gly Pro Asn Glu Asn Leu Thr Glu Arg Ser Leu
    370                 375                 380
Gln Asp Ala Gln Arg Leu Phe Leu Met Ser Glu Ala Val Gln Pro Val
385                 390                 395                 400
Thr Pro Glu Pro Cys Val Thr Gln Asp Ser Val Arg Phe Ser His Leu
                405                 410                 415
Val Val Asp Leu Val Gln Ala Lys Asp Thr Leu Tyr His Val Leu Tyr
            420                 425                 430
Ile Gly Thr Glu Ser Gly Thr Ile Leu Lys Ala Leu Ser Thr Ala Ser
        435                 440                 445
Arg Ser Leu His Gly Cys Tyr Leu Glu Glu Leu His Val Leu Pro Pro
    450                 455                 460
Gly Arg Arg Glu Pro Leu Arg Ser Leu Arg Ile Leu His Ser Ala Arg
465                 470                 475                 480
Ala Leu Phe Val Gly Leu Arg Asp Gly Val Leu Arg Val Pro Leu Glu
                485                 490                 495
Arg Cys Ala Ala Tyr Arg Ser Gln Gly Ala Cys Leu Gly Ala Arg Asp
            500                 505                 510
Pro Tyr Cys Gly Trp Asp Gly Lys Gln Gln Arg Cys Ser Thr Leu Glu
        515                 520                 525
Asp Ser Ser Asn Met Ser Leu Trp Thr Gln Asn Ile Thr Ala Cys Pro
    530                 535                 540
Val Arg Asn Val Thr Arg Asp Gly Gly Phe Gly Pro Trp Ser Pro Trp
545                 550                 555                 560
Gln Pro Cys Glu His Leu Asp Gly Asp Asn Ser Gly Ser Cys Leu Cys
                565                 570                 575
Arg Ala Arg Ser Cys Asp Ser Pro Arg Pro Arg Cys Gly Gly Leu Asp
            580                 585                 590
Cys Leu Gly Pro Ala Ile His Ile Ala Asn Cys Ser Arg Asn Gly Ala
        595                 600                 605
Trp Thr Pro Trp Ser Ser Trp Ala Leu Cys Ser Thr Ser Cys Gly Ile
    610                 615                 620
Gly Phe Gln Val Arg Gln Arg Ser Cys Ser Asn Pro Ala Pro Arg His
625                 630                 635                 640
Gly Gly Arg Ile Cys Val Gly Lys Ser Arg Glu Glu Arg Phe Cys Asn
                645                 650                 655
Glu Asn Thr Pro Cys Pro Val Pro Ile Phe Trp Ala Ser Trp Gly Ser
            660                 665                 670
Trp Ser Lys Cys Ser Ser Asn Cys Gly Gly Gly Met Gln Ser Arg Arg
        675                 680                 685
Arg Ala Cys Glu Asn Gly Asn Ser Cys Leu Gly Cys Gly Val Glu Phe
    690                 695                 700
Lys Thr Cys Asn Pro Glu Gly Cys Pro Glu Val Arg Arg Asn Thr Pro
705                 710                 715                 720
Trp Thr Pro Trp Leu Pro Val Asn Val Thr Gln Gly Gly Ala Arg Gln
                725                 730                 735
Glu Gln Arg Phe Arg Phe Thr Cys Arg Ala Pro Leu Ala Asp Pro His
            740                 745                 750
Gly Leu Gln Phe Gly Arg Arg Arg Thr Glu Thr Arg Thr Cys Pro Ala
        755                 760                 765
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Asp Gly Ser Gly Ser Cys Asp Thr Asp Ala Leu Val Glu Asp Leu Leu
    770                 775                 780
Arg Ser Gly Ser Thr Ser Pro His Thr Val Ser Gly Gly Trp Ala Ala
785                 790                 795                 800
Trp Gly Pro Trp Ser Ser Cys Ser Arg Asp Cys Glu Leu Gly Phe Arg
                805                 810                 815
Val Arg Lys Arg Thr Cys Thr Asn Pro Glu Pro Arg Asn Gly Gly Leu
            820                 825                 830
Pro Cys Val Gly Asp Ala Ala Glu Tyr Gln Asp Cys Asn Pro Gln Ala
        835                 840                 845
Cys Pro Val Arg Gly Ala Trp Ser Cys Trp Thr Ser Trp Ser Pro Cys
    850                 855                 860
Ser Ala Ser Cys Gly Gly Gly His Tyr Gln Arg Thr Arg Ser Cys Thr
865                 870                 875                 880
Ser Pro Ala Pro Ser Pro Gly Glu Asp Ile Cys Leu Gly Leu His Thr
                885                 890                 895
Glu Glu Ala Leu Cys Ala Thr Gln Ala Cys Pro Glu Gly Trp Ser Pro
            900                 905                 910
Trp Ser Glu Trp Ser Lys Cys Thr Asp Asp Gly Ala Gln Ser Arg Ser
        915                 920                 925
Arg His Cys Glu Glu Leu Leu Pro Gly Ser Ser Ala Cys Ala Gly Asn
    930                 935                 940
Ser Ser Gln Ser Arg Pro Cys Pro Tyr Ser Glu Ile Pro Gly Phe Asn
945                 950                 955                 960
Leu Ile His Leu Val Ala Thr Gly Ile Ser Cys Phe Leu Gly Ser Gly
                965                 970                 975
Leu Leu Thr Leu Ala Val Tyr Leu Ser Cys Gln His Cys Gln Arg Gln
            980                 985                 990
Ser Gln Glu Ser Thr Leu Val His Pro Ala Thr Pro Asn His Leu His
        995                 1000                1005
Tyr Lys Gly Gly Gly Thr Pro Lys Asn Glu Lys Tyr Thr Pro Met Glu
    1010                1015                1020
Phe Lys Thr Leu Asn Lys Asn Asn Leu Ile Pro Asp Asp Arg Ala Asn
1025                1030                1035                1040
Phe Tyr Pro Leu Gln Gln Thr Asn Val Tyr Thr Thr Thr Tyr Tyr Pro
                1045                1050                1055
Ser Pro Leu Asn Lys His Ser Phe Arg Pro Glu Ala Ser Pro Gly Gln
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<210> 9
<211> 3456
<212> DNA
<213> homo sapiens

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<212> PRT
<213> homo sapiens

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Leu Ala Val Ser Leu Leu Leu Pro Ser Leu Thr Leu Leu Val Ser His
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Leu Ser Ser Ser Gln Asp Val Ser Ser Glu Pro Ser Ser Glu Gln Gln
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Leu Cys Ala Leu Ser Lys His Pro Thr Val Ala Phe Glu Asp Leu Gln
            100                 105                 110
Pro Trp Val Ser Asn Phe Thr Tyr Pro Gly Ala Arg Asp Phe Ser Gln
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Tyr Leu Phe Arg Leu Ser Leu Ala Asn Val Ser Leu Leu Gln Ala Thr
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Glu Trp Ala Ser Ser Glu Asp Thr Arg Arg Ser Cys Gln Ser Lys Gly
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Lys Thr Glu Glu Glu Cys Gln Asn Tyr Val Arg Val Leu Ile Val Ala
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Gly Arg Lys Val Phe Met Cys Gly Thr Asn Ala Phe Ser Pro Met Cys
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Thr Ser Arg Gln Val Gly Asn Leu Ser Arg Thr Ile Glu Lys Ile Asn
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Gly Val Ala Arg Cys Pro Tyr Asp Pro Arg His Asn Ser Thr Ala Val
225                 230                 235                 240
Ile Ser Ser Gln Gly Glu Leu Tyr Ala Ala Thr Val Ile Asp Phe Ser
                245                 250                 255
Gly Arg Asp Pro Ala Ile Tyr Arg Ser Leu Gly Ser Gly Pro Pro Leu
            260                 265                 270
Arg Thr Ala Gln Tyr Asn Ser Lys Trp Leu Asn Glu Pro Asn Phe Val
        275                 280                 285
Ala Ala Tyr Asp Ile Gly Leu Phe Ala Tyr Phe Phe Leu Arg Glu Asn
    290                 295                 300
Ala Val Glu His Asp Cys Gly Arg Thr Val Tyr Ser Arg Val Ala Arg
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Val Cys Lys Asn Asp Val Gly Gly Arg Phe Leu Leu Glu Asp Thr Trp
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Thr Thr Phe Met Lys Ala Arg Leu Asn Cys Ser Arg Pro Gly Glu Val
            340                 345                 350
Pro Phe Tyr Tyr Asn Glu Leu Gln Ser Ala Phe His Leu Pro Glu Gln
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Asp Leu Ile Tyr Gly Val Phe Thr Thr Asn Val Asn Ser Ile Ala Ala
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Ser Ala Val Cys Ala Phe Asn Leu Ser Ala Ile Ser Gln Ala Phe Asn
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Thr Ile Leu Lys Ala Leu Ser Thr Ala Ser Arg Ser Leu His Gly Cys
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Tyr Leu Glu Glu Leu His Val Leu Pro Pro Gly Arg Arg Glu Pro Leu
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Arg Ser Leu Arg Ile Leu His Ser Ala Arg Ala Leu Phe Val Gly Leu
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Arg Asp Gly Val Leu Arg Val Pro Leu Glu Arg Cys Ala Ala Tyr Arg
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Ser Gln Gly Ala Cys Leu Gly Ala Arg Asp Pro Tyr Cys Gly Trp Asp
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Gly Lys Gln Gln Arg Cys Ser Thr Leu Glu Asp Ser Ser Asn Met Ser
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Leu Trp Thr Gln Asn Ile Thr Ala Cys Pro Val Arg Asn Val Thr Arg
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Asp Gly Gly Phe Gly Pro Trp Ser Pro Trp Gln Pro Cys Glu His Leu
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Ser Pro Arg Pro Arg Cys Gly Gly Leu Asp Cys Leu Gly Pro Ala Ile
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His Ile Ala Asn Cys Ser Arg Asn Gly Ala Trp Thr Pro Trp Ser Ser
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Trp Ala Leu Cys Ser Thr Ser Cys Gly Ile Gly Phe Gln Val Arg Gln
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Arg Ser Cys Ser Asn Pro Ala Pro Arg His Gly Gly Arg Ile Cys Val
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Gly Lys Ser Arg Glu Glu Arg Phe Cys Asn Glu Asn Thr Pro Cys Pro
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Val Pro Ile Phe Trp Ala Ser Trp Gly Ser Trp Ser Lys Cys Ser Ser
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Asn Ser Cys Leu Gly Cys Gly Val Glu Phe Lys Thr Cys Asn Pro Glu
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Gly Cys Pro Glu Val Arg Arg Asn Thr Pro Trp Thr Pro Trp Leu Pro
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Thr Cys Arg Ala Pro Leu Ala Asp Pro His Gly Leu Gln Phe Gly Arg
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Asp Thr Asp Ala Leu Val Glu Asp Leu Leu Arg Ser Gly Ser Thr Ser
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Pro His Thr Val Ser Gly Gly Trp Ala Ala Trp Gly Pro Trp Ser Ser
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Cys Ser Arg Asp Cys Glu Leu Gly Phe Arg Val Arg Lys Arg Thr Cys
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Thr Gln Ala Cys Pro Glu Gly Trp Ser Pro Trp Ser Glu Trp Ser Lys
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Cys Thr Asp Asp Gly Ala Gln Ser Arg Ser Arg His Cys Glu Glu Leu
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Leu Pro Gly Ser Ser Ala Cys Ala Gly Asn Ser Ser Gln Ser Arg Pro
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Cys Pro Tyr Ser Glu Ile Pro Val Ile Leu Pro Ala Ser Ser Met Glu
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His Pro Ala Thr Pro Asn His Leu His Tyr Lys Gly Gly Gly Thr Pro
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Lys Asn Glu Lys Tyr Thr Pro Met Glu Phe Lys Thr Leu Asn Lys Asn
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Asn Leu Ile Pro Asp Asp Arg Ala Asn Phe Tyr Pro Leu Gln Gln Thr
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Pro Gly Ala Arg Thr Ala Glu Gly Pro Ile Met Val Leu Ala Gly Pro
    50   55   60
Leu Ala Val Ser Leu Leu Leu Pro Ser Leu Thr Leu Leu Val Ser His

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Leu Ser Ser Ser Gln Asp Val Ser Ser Glu Pro Ser Ser Glu Gln Gln
85 90 95
Leu Cys Ala Leu Ser Lys His Pro Thr Val Ala Phe Glu Asp Leu Gln
100 105 110
Pro Trp Val Ser Asn Phe Thr Tyr Pro Gly Ala Arg Asp Phe Ser Gln
115 120 125
Leu Ala Leu Asp Pro Ser Gly Asn Gln Leu Ile Val Gly Ala Arg Asn
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Tyr Leu Phe Arg Leu Ser Leu Ala Asn Val Ser Leu Leu Gln Ala Thr
145 150 155 160
Glu Trp Ala Ser Ser Glu Asp Thr Arg Arg Ser Cys Gln Ser Lys Gly
165 170 175
Lys Thr Glu Glu Glu Cys Gln Asn Tyr Val Arg Val Leu Ile Val Ala
180 185 190
Gly Arg Lys Val Phe Met Cys Gly Thr Asn Ala Phe Ser Pro Met Cys
195 200 205
Thr Ser Arg Gln Val Gly Asn Leu Ser Arg Thr Ile Glu Lys Ile Asn
210 215 220
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Ile Ser Ser Gln Gly Glu Leu Tyr Ala Ala Thr Val Ile Asp Phe Ser
245 250 255
Gly Arg Asp Pro Ala Ile Tyr Arg Ser Leu Gly Ser Gly Pro Pro Leu
260 265 270
Arg Thr Ala Gln Tyr Asn Ser Lys Trp Leu Asn Glu Pro Asn Phe Val
275 280 285
Ala Ala Tyr Asp Ile Gly Leu Phe Ala Tyr Phe Phe Leu Arg Glu Asn
290 295 300
Ala Val Glu His Asp Cys Gly Arg Thr Val Tyr Ser Arg Val Ala Arg
305 310 315 320
Val Cys Lys Asn Asp Val Gly Gly Arg Phe Leu Leu Glu Asp Thr Trp
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Thr Thr Phe Met Lys Ala Arg Leu Asn Cys Ser Arg Pro Gly Glu Val
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Pro Phe Tyr Tyr Asn Glu Leu Gln Ser Ala Phe His Leu Pro Glu Gln
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370 375 380
Ser Ala Val Cys Ala Phe Asn Leu Ser Ala Ile Ser Gln Ala Phe Asn
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Pro Asn Glu Asn Leu Thr Glu Arg Ser Leu Gln Asp Ala Gln Arg Leu
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Thr Gln Asp Ser Val Arg Phe Ser His Leu Val Val Asp Leu Val Gln
465 470 475 480
Ala Lys Asp Thr Leu Tyr His Val Leu Tyr Ile Gly Thr Glu Ser Gly
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Thr Ile Leu Lys Ala Leu Ser Thr Ala Ser Arg Ser Leu His Gly Cys
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Tyr Leu Glu Glu Leu His Val Leu Pro Pro Gly Arg Arg Glu Pro Leu

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Gly Lys Gln Gln Arg Cys Ser Thr Leu Glu Asp Ser Ser Asn Met Ser
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Leu Trp Thr Gln Asn Ile Thr Ala Cys Pro Val Arg Asn Val Thr Arg
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Asp Gly Gly Phe Gly Pro Trp Ser Pro Trp Gln Pro Cys Glu His Leu
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Asp Gly Asp Asn Ser Gly Ser Cys Leu Cys Arg Ala Arg Ser Cys Asp
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Ser Pro Arg Pro Arg Cys Gly Gly Leu Asp Cys Leu Gly Pro Ala Ile
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His Ile Ala Asn Cys Ser Arg Asn Gly Ala Trp Thr Pro Trp Ser Ser
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Trp Ala Leu Cys Ser Thr Ser Cys Gly Ile Gly Phe Gln Val Arg Gln
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Arg Ser Cys Ser Asn Pro Ala Pro Arg His Gly Gly Arg Ile Cys Val
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Gly Lys Ser Arg Glu Glu Arg Phe Cys Asn Glu Asn Thr Pro Cys Pro
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Val Asn Val Thr Gln Gly Gly Ala Arg Gln Glu Gln Arg Phe Arg Phe
785                 790                 795                 800
Thr Cys Arg Ala Pro Leu Ala Asp Pro His Gly Leu Gln Phe Gly Arg
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Pro His Thr Val Ser Gly Gly Trp Ala Ala Trp Gly Pro Trp Ser Ser
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Cys Ser Arg Asp Cys Glu Leu Gly Phe Arg Val Arg Lys Arg Thr Cys
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Ala Glu Tyr Gln Asp Cys Asn Pro Gln Ala Cys Pro Val Arg Gly Ala
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Trp Ser Cys Trp Thr Ser Trp Ser Pro Cys Ser Ala Ser Cys Gly Gly
        915                 920                 925
Gly His Tyr Gln Arg Thr Arg Ser Cys Thr Ser Pro Ala Pro Ser Pro
    930                 935                 940
Gly Glu Asp Ile Cys Leu Gly Leu His Thr Glu Glu Ala Leu Cys Ala
945                 950                 955                 960
Thr Gln Ala Cys Pro Glu Gly Trp Ser Pro Trp Ser Glu Trp Ser Lys
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                965                 970                 975
Cys Thr Asp Asp Gly Ala Gln Ser Arg Ser Arg His Cys Glu Glu Leu
            980                 985                 990
Leu Pro Gly Ser Ser Ala Cys Ala Gly Asn Ser Ser Gln Ser Arg Pro
        995                 1000                1005
Cys Pro Tyr Ser Glu Ile Pro Gly Phe Asn Leu Ile His Leu Val Ala
    1010                1015                1020
Thr Gly Ile Ser Cys Phe Leu Gly Ser Gly Leu Leu Thr Leu Ala Val
1025                1030                1035                1040
Tyr Leu Ser Cys Gln His Cys Gln Arg Gln Ser Gln Glu Ser Thr Leu
                1045                1050                1055
Val His Pro Ala Thr Pro Asn His Leu His Tyr Lys Gly Gly Gly Thr
            1060                1065                1070
Pro Lys Asn Glu Lys Tyr Thr Pro Met Glu Phe Lys Thr Leu Asn Lys
        1075                1080                1085
Asn Asn Leu Ile Pro Asp Asp Arg Ala Asn Phe Tyr Pro Leu Gln Gln
    1090                1095                1100
Thr Asn Val Tyr Thr Thr Thr Tyr Tyr Pro Ser Pro Leu Asn Lys His
1105                1110                1115                1120
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<210> 13
<211> 2865
<212> DNA
<213> homo sapiens

<400> 13

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acagctgtca tctcctccca gggggagctc tatgcagcca cggtcatcga cttctcaggt     180
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gtggcccgcg tgtgcaagaa tgacgtgggg ggccgattcc tgctggagga cacatggacc     420
acattcatga aggcccggct caactgctcc cgcccgggcg aggtcccctt ctactataac     480
gagctgcaga gtgccttcca cttgccrgag caggacctca tctatggagt tttcacaacc     540
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<211> 954
<212> PRT
<213> homo sapiens

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35 40 45
Glu Leu Tyr Ala Ala Thr Val Ile Asp Phe Ser Gly Arg Asp Pro Ala
50 55 60
Ile Tyr Arg Ser Leu Gly Ser Gly Pro Pro Leu Arg Thr Ala Gln Tyr
65 70 75 80
Asn Ser Lys Trp Leu Asn Glu Pro Asn Phe Val Ala Ala Tyr Asp Ile
85 90 95
Gly Leu Phe Ala Tyr Phe Phe Leu Arg Glu Asn Ala Val Glu His Asp
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Cys Gly Arg Thr Val Tyr Ser Arg Val Ala Arg Val Cys Lys Asn Asp
115 120 125
Val Gly Gly Arg Phe Leu Leu Glu Asp Thr Trp Thr Thr Phe Met Lys
130 135 140
Ala Arg Leu Asn Cys Ser Arg Pro Gly Glu Val Pro Phe Tyr Tyr Asn
145 150 155 160
Glu Leu Gln Ser Ala Phe His Leu Pro Glu Gln Asp Leu Ile Tyr Gly
165 170 175
Val Phe Thr Thr Asn Val Asn Ser Ile Ala Ala Ser Ala Val Cys Ala
180 185 190
Phe Asn Leu Ser Ala Ile Ser Gln Ala Phe Asn Gly Pro Phe Arg Tyr
195 200 205
Gln Glu Asn Pro Arg Ala Ala Trp Leu Pro Ile Ala Asn Pro Ile Pro
210 215 220
Asn Phe Gln Cys Gly Thr Leu Pro Glu Thr Gly Pro Asn Glu Asn Leu

225 230 235 240
Thr Glu Arg Ser Leu Gln Asp Ala Gln Arg Leu Phe Leu Met Ser Glu
245 250 255
Ala Val Gln Pro Val Thr Pro Glu Pro Cys Val Thr Gln Asp Ser Val
260 265 270
Arg Phe Ser His Leu Val Val Asp Leu Val Gln Ala Lys Asp Thr Leu
275 280 285
Tyr His Val Leu Tyr Ile Gly Thr Glu Ser Gly Thr Ile Leu Lys Ala
290 295 300
Leu Ser Thr Ala Ser Arg Ser Leu His Gly Cys Tyr Leu Glu Glu Leu
305 310 315 320
His Val Leu Pro Pro Gly Arg Arg Glu Pro Leu Arg Ser Leu Arg Ile
325 330 335
Leu His Ser Ala Arg Ala Leu Phe Val Gly Leu Arg Asp Gly Val Leu
340 345 350
Arg Val Pro Leu Glu Arg Cys Ala Ala Tyr Arg Ser Gln Gly Ala Cys
355 360 365
Leu Gly Ala Arg Asp Pro Tyr Cys Gly Trp Asp Gly Lys Gln Gln Arg
370 375 380
Cys Ser Thr Leu Glu Asp Ser Ser Asn Met Ser Leu Trp Thr Gln Asn
385 390 395 400
Ile Thr Ala Cys Pro Val Arg Asn Val Thr Arg Asp Gly Gly Phe Gly
405 410 415
Pro Trp Ser Pro Trp Gln Pro Cys Glu His Leu Asp Gly Asp Asn Ser
420 425 430
Gly Ser Cys Leu Cys Arg Ala Arg Ser Cys Asp Ser Pro Arg Pro Arg
435 440 445
Cys Gly Gly Leu Asp Cys Leu Gly Pro Ala Ile His Ile Ala Asn Cys
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Ser Arg Asn Gly Ala Trp Thr Pro Trp Ser Ser Trp Ala Leu Cys Ser
465 470 475 480
Thr Ser Cys Gly Ile Gly Phe Gln Val Arg Gln Arg Ser Cys Ser Asn
485 490 495
Pro Ala Pro Arg His Gly Gly Arg Ile Cys Val Gly Lys Ser Arg Glu
500 505 510
Glu Arg Phe Cys Asn Glu Asn Thr Pro Cys Pro Val Pro Ile Phe Trp
515 520 525
Ala Ser Trp Gly Ser Trp Ser Lys Cys Ser Ser Asn Cys Gly Gly Gly
530 535 540
Met Gln Ser Arg Arg Arg Ala Cys Glu Asn Gly Asn Ser Cys Leu Gly
545 550 555 560
Cys Gly Val Glu Phe Lys Thr Cys Asn Pro Glu Gly Cys Pro Glu Val
565 570 575
Arg Arg Asn Thr Pro Trp Thr Pro Trp Leu Pro Val Asn Val Thr Gln
580 585 590
Gly Gly Ala Arg Gln Glu Gln Arg Phe Arg Phe Thr Cys Arg Ala Pro
595 600 605
Leu Ala Asp Pro His Gly Leu Gln Phe Gly Arg Arg Arg Thr Glu Thr
610 615 620
Arg Thr Cys Pro Ala Asp Gly Ser Gly Ser Cys Asp Thr Asp Ala Leu
625 630 635 640
Val Glu Asp Leu Leu Arg Ser Gly Ser Thr Ser Pro His Thr Val Ser
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Gly Gly Trp Ala Ala Trp Gly Pro Trp Ser Ser Cys Ser Arg Asp Cys
660 665 670
Glu Leu Gly Phe Arg Val Arg Lys Arg Thr Cys Thr Asn Pro Glu Pro

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Ser Trp Ser Pro Cys Ser Ala Ser Cys Gly Gly Gly His Tyr Gln Arg
                725                 730                 735
Thr Arg Ser Cys Thr Ser Pro Ala Pro Ser Pro Gly Glu Asp Ile Cys
            740                 745                 750
Leu Gly Leu His Thr Glu Glu Ala Leu Cys Ala Thr Gln Ala Cys Pro
        755                 760                 765
Glu Gly Trp Ser Pro Trp Ser Glu Trp Ser Lys Cys Thr Asp Asp Gly
    770                 775                 780
Ala Gln Ser Arg Ser Arg His Cys Glu Glu Leu Leu Pro Gly Ser Ser
785                 790                 795                 800
Ala Cys Ala Gly Asn Ser Ser Gln Ser Arg Pro Cys Pro Tyr Ser Glu
                805                 810                 815
Ile Pro Val Ile Leu Pro Ala Ser Ser Met Glu Glu Ala Thr Gly Cys
            820                 825                 830
Ala Gly Phe Asn Leu Ile His Leu Val Ala Thr Gly Ile Ser Cys Phe
        835                 840                 845
Leu Gly Ser Gly Leu Leu Thr Leu Ala Val Tyr Leu Ser Cys Gln His
    850                 855                 860
Cys Gln Arg Gln Ser Gln Glu Ser Thr Leu Val His Pro Ala Thr Pro
865                 870                 875                 880
Asn His Leu His Tyr Lys Gly Gly Gly Thr Pro Lys Asn Glu Lys Tyr
                885                 890                 895
Thr Pro Met Glu Phe Lys Thr Leu Asn Lys Asn Asn Leu Ile Pro Asp
            900                 905                 910
Asp Arg Ala Asn Phe Tyr Pro Leu Gln Gln Thr Asn Val Tyr Thr Thr
        915                 920                 925
Thr Tyr Tyr Pro Ser Pro Leu Asn Lys His Ser Phe Arg Pro Glu Ala
    930                 935                 940
Ser Pro Gly Gln Arg Cys Phe Pro Asn Ser
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<212> DNA
<213> homo sapiens

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tacttcttcc tgcgggagaa cgcagtggag cacgactgtg gacgcaccgt gtactctcgc 360
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acggagcgca gcctgcagga cgcgcagcgc ctcttcctga tgagcgaggc cgtgcagccg 780
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aacttctacc cattgcagca gaccaatgtg tacacgacta cttactaccc aagccccctg    2760
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<210> 16
<211> 939
<212> PRT
<213> homo sapiens

<400> 16

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Pro Tyr Asp Pro Arg His Asn Ser Thr Ala Val Ile Ser Ser Gln Gly
        35                  40                  45
Glu Leu Tyr Ala Ala Thr Val Ile Asp Phe Ser Gly Arg Asp Pro Ala
    50                  55                  60
Ile Tyr Arg Ser Leu Gly Ser Gly Pro Pro Leu Arg Thr Ala Gln Tyr
65                  70                  75                  80
Asn Ser Lys Trp Leu Asn Glu Pro Asn Phe Val Ala Ala Tyr Asp Ile
                85                  90                  95
Gly Leu Phe Ala Tyr Phe Phe Leu Arg Glu Asn Ala Val Glu His Asp
            100                 105                 110
Cys Gly Arg Thr Val Tyr Ser Arg Val Ala Arg Val Cys Lys Asn Asp
        115                 120                 125
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Val Gly Gly Arg Phe Leu Leu Glu Asp Thr Trp Thr Thr Phe Met Lys
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Ala Arg Leu Asn Cys Ser Arg Pro Gly Glu Val Pro Phe Tyr Tyr Asn
145                 150                 155                 160
Glu Leu Gln Ser Ala Phe His Leu Pro Glu Gln Asp Leu Ile Tyr Gly
                165                 170                 175
Val Phe Thr Thr Asn Val Asn Ser Ile Ala Ala Ser Ala Val Cys Ala
            180                 185                 190
Phe Asn Leu Ser Ala Ile Ser Gln Ala Phe Asn Gly Pro Phe Arg Tyr
        195                 200                 205
Gln Glu Asn Pro Arg Ala Ala Trp Leu Pro Ile Ala Asn Pro Ile Pro
    210                 215                 220
Asn Phe Gln Cys Gly Thr Leu Pro Glu Thr Gly Pro Asn Glu Asn Leu
225                 230                 235                 240
Thr Glu Arg Ser Leu Gln Asp Ala Gln Arg Leu Phe Leu Met Ser Glu
                245                 250                 255
Ala Val Gln Pro Val Thr Pro Glu Pro Cys Val Thr Gln Asp Ser Val
            260                 265                 270
Arg Phe Ser His Leu Val Val Asp Leu Val Gln Ala Lys Asp Thr Leu
        275                 280                 285
Tyr His Val Leu Tyr Ile Gly Thr Glu Ser Gly Thr Ile Leu Lys Ala
    290                 295                 300
Leu Ser Thr Ala Ser Arg Ser Leu His Gly Cys Tyr Leu Glu Glu Leu
305                 310                 315                 320
His Val Leu Pro Pro Gly Arg Arg Glu Pro Leu Arg Ser Leu Arg Ile
                325                 330                 335
Leu His Ser Ala Arg Ala Leu Phe Val Gly Leu Arg Asp Gly Val Leu
            340                 345                 350
Arg Val Pro Leu Glu Arg Cys Ala Ala Tyr Arg Ser Gln Gly Ala Cys
        355                 360                 365
Leu Gly Ala Arg Asp Pro Tyr Cys Gly Trp Asp Gly Lys Gln Gln Arg
    370                 375                 380
Cys Ser Thr Leu Glu Asp Ser Ser Asn Met Ser Leu Trp Thr Gln Asn
385                 390                 395                 400
Ile Thr Ala Cys Pro Val Arg Asn Val Thr Arg Asp Gly Gly Phe Gly
                405                 410                 415
Pro Trp Ser Pro Trp Gln Pro Cys Glu His Leu Asp Gly Asp Asn Ser
            420                 425                 430
Gly Ser Cys Leu Cys Arg Ala Arg Ser Cys Asp Ser Pro Arg Pro Arg
        435                 440                 445
Cys Gly Gly Leu Asp Cys Leu Gly Pro Ala Ile His Ile Ala Asn Cys
    450                 455                 460
Ser Arg Asn Gly Ala Trp Thr Pro Trp Ser Ser Trp Ala Leu Cys Ser
465                 470                 475                 480
Thr Ser Cys Gly Ile Gly Phe Gln Val Arg Gln Arg Ser Cys Ser Asn
                485                 490                 495
Pro Ala Pro Arg His Gly Gly Arg Ile Cys Val Gly Lys Ser Arg Glu
            500                 505                 510
Glu Arg Phe Cys Asn Glu Asn Thr Pro Cys Pro Val Pro Ile Phe Trp
        515                 520                 525
Ala Ser Trp Gly Ser Trp Ser Lys Cys Ser Ser Asn Cys Gly Gly Gly
    530                 535                 540
Met Gln Ser Arg Arg Arg Ala Cys Glu Asn Gly Asn Ser Cys Leu Gly
545                 550                 555                 560
Cys Gly Val Glu Phe Lys Thr Cys Asn Pro Glu Gly Cys Pro Glu Val
                565                 570                 575
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Arg Arg Asn Thr Pro Trp Thr Pro Trp Leu Pro Val Asn Val Thr Gln
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Gly Gly Ala Arg Gln Glu Gln Arg Phe Arg Phe Thr Cys Arg Ala Pro
        595                 600                 605
Leu Ala Asp Pro His Gly Leu Gln Phe Gly Arg Arg Arg Thr Glu Thr
    610                 615                 620
Arg Thr Cys Pro Ala Asp Gly Ser Gly Ser Cys Asp Thr Asp Ala Leu
625                 630                 635                 640
Val Glu Asp Leu Leu Arg Ser Gly Ser Thr Ser Pro His Thr Val Ser
                645                 650                 655
Gly Gly Trp Ala Ala Trp Gly Pro Trp Ser Ser Cys Ser Arg Asp Cys
            660                 665                 670
Glu Leu Gly Phe Arg Val Arg Lys Arg Thr Cys Thr Asn Pro Glu Pro
        675                 680                 685
Arg Asn Gly Gly Leu Pro Cys Val Gly Asp Ala Ala Glu Tyr Gln Asp
    690                 695                 700
Cys Asn Pro Gln Ala Cys Pro Val Arg Gly Ala Trp Ser Cys Trp Thr
705                 710                 715                 720
Ser Trp Ser Pro Cys Ser Ala Ser Cys Gly Gly Gly His Tyr Gln Arg
                725                 730                 735
Thr Arg Ser Cys Thr Ser Pro Ala Pro Ser Pro Gly Glu Asp Ile Cys
            740                 745                 750
Leu Gly Leu His Thr Glu Glu Ala Leu Cys Ala Thr Gln Ala Cys Pro
        755                 760                 765
Glu Gly Trp Ser Pro Trp Ser Glu Trp Ser Lys Cys Thr Asp Asp Gly
    770                 775                 780
Ala Gln Ser Arg Ser Arg His Cys Glu Glu Leu Leu Pro Gly Ser Ser
785                 790                 795                 800
Ala Cys Ala Gly Asn Ser Ser Gln Ser Arg Pro Cys Pro Tyr Ser Glu
                805                 810                 815
Ile Pro Gly Phe Asn Leu Ile His Leu Val Ala Thr Gly Ile Ser Cys
            820                 825                 830
Phe Leu Gly Ser Gly Leu Leu Thr Leu Ala Val Tyr Leu Ser Cys Gln
        835                 840                 845
His Cys Gln Arg Gln Ser Gln Glu Ser Thr Leu Val His Pro Ala Thr
    850                 855                 860
Pro Asn His Leu His Tyr Lys Gly Gly Gly Thr Pro Lys Asn Glu Lys
865                 870                 875                 880
Tyr Thr Pro Met Glu Phe Lys Thr Leu Asn Lys Asn Asn Leu Ile Pro
                885                 890                 895
Asp Asp Arg Ala Asn Phe Tyr Pro Leu Gln Gln Thr Asn Val Tyr Thr
            900                 905                 910
Thr Thr Tyr Tyr Pro Ser Pro Leu Asn Lys His Ser Phe Arg Pro Glu
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Ala Ser Pro Gly Gln Arg Cys Phe Pro Asn Ser
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<212> DNA
<213> homo sapiens

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tgctgggagc ccgagcgcag cgggcgcggg cccgggtggg gactgcaccg gagcgctgag 180

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gagaatggag atggcaagag ggcaggcttt taagtttggg ttggagacaa cttcctgtgg    4020
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<210> 18
<211> 648
<212> DNA
<213> homo sapiens

<400> 18

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gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg     180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt     240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg     300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg     360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc     420
ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag     480
gagaagtgtc cttatgaccc agcccgtggc ttcacaggcc tcatcattga tggaggcctc     540
tacacagcca ctaggtatga attccggagc attcctgaca tccgccggag ccgccaccca     600
cactccctga gaactgagga gacaccaatg cattggctca atggttag                  648
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<210> 19
<211> 215
<212> PRT
<213> homo sapiens

<400> 19

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Met Trp Gly Arg Leu Trp Pro Leu Leu Leu Ser Ile Leu Thr Ala Thr
 1               5                  10                  15
Ala Val Pro Gly Pro Ser Leu Arg Arg Pro Ser Arg Glu Leu Asp Ala
            20                  25                  30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
        35                  40                  45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
    50                  55                  60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65                  70                  75                  80
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                85                  90                  95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
            100                 105                 110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
        115                 120                 125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
    130                 135                 140
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
```

```
                165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
            180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
        195                 200                 205
Pro Met His Trp Leu Asn Gly
    210                 215
```

<210> 20
<211> 1491
<212> DNA
<213> homo sapiens

<400> 20

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gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg     180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt     240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg     300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg     360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc     420
ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag     480
gagaagtgtc cttatgaccc agcccgtggc ttcacaggcc tcatcattga tggaggcctc     540
tacacagcca ctaggtatga attccggagc attcctgaca tccgccggag ccgccaccca     600
cactccctga gaactgagga gacaccaatg cattggctca atgatgcgga gtttgtgttc     660
tccgtcctcg tgcgggagag caaggccagt gcagtgggtg atgatgacaa ggtgtactac     720
ttcttcacgg agcgtgccac tgaggagggc tctggcagct tcactcagag ccgcagcagt     780
caccgtgtgg cccgtgtggc tcgygtctgc aagggagacc tgggagggaa gaagatcctg     840
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acactgcgtg gggtctgcag cctggatgct gaaacctcaa gccgtacaca cttctatgca     960
gccttcacgc tgagcacaca gtggaagacc ctggaggcct cagccatctg ccgctatgac    1020
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cgctggggtc gctatgaggg tggggtgcct gagccccggc ctggctcgtg tatcacagat    1140
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gtaaagttgc acccactgat ggctcggccc gttgtgccca cacgtggacg gcccctgctg    1260
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```

<210> 21
<211> 496
<212> PRT
<213> homo sapiens

<400> 21

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Ala Val Pro Gly Pro Ser Leu Arg Arg Pro Ser Arg Glu Leu Asp Ala
            20                  25                  30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
        35                  40                  45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
    50                  55                  60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65                  70                  75                  80
```

```
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                85                  90                  95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
            100                 105                 110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
        115                 120                 125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
    130                 135                 140
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
                165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
            180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
        195                 200                 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
    210                 215                 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225                 230                 235                 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
                245                 250                 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
            260                 265                 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
        275                 280                 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
    290                 295                 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305                 310                 315                 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile
                325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
            340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
        355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
    370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
            420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
        435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
    450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln Val Ala Leu Leu Cys Asp Pro
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<210> 22
<211> 2109
<212> DNA

<213> homo sapiens

<400> 22
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ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt 240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg 300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg 360
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ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag 480
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<210> 23
<211> 702
<212> PRT
<213> homo sapiens

<400> 23
Met Trp Gly Arg Leu Trp Pro Leu Leu Leu Ser Ile Leu Thr Ala Thr
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Ala Val Pro Gly Pro Ser Leu Arg Arg Pro Ser Arg Glu Leu Asp Ala
20 25 30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
35 40 45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
50 55 60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65 70 75 80

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Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                  85                  90                  95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
             100                 105                 110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
         115                 120                 125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
     130                 135                 140
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
                 165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
             180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
         195                 200                 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
     210                 215                 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225                 230                 235                 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
                 245                 250                 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
             260                 265                 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
         275                 280                 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
     290                 295                 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305                 310                 315                 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile
                 325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
             340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
         355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
     370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                 405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
             420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
         435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
     450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala
                 485                 490                 495
Pro Ser Gly Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg
             500                 505                 510
Ser Cys Tyr Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp
         515                 520                 525
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Pro Gly Thr His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Ser
    530                 535                 540
Gln Gly Ser Arg Thr Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg
545                 550                 555                 560
Gly Cys Glu Ser Ser Arg Asp Thr Gly Arg Ala Leu Gln Val His Met
                565                 570                 575
Gly Ser Met Ser Pro Pro Ser Ala Trp Pro Cys Val Leu Asp Gly Pro
            580                 585                 590
Glu Thr Arg Gln Val Leu Cys Gln Pro Pro Lys Pro Cys Val His Ser
        595                 600                 605
His Ala His Met Glu Glu Cys Leu Ser Ala Gly Leu Gln Cys Pro His
    610                 615                 620
Pro His Leu Leu Leu Val His Ser Cys Phe Ile Pro Ala Ser Gly Leu
625                 630                 635                 640
Gly Val Pro Ser Gln Leu Pro His Pro Ile Trp Ser Ser Ser Pro Ala
                645                 650                 655
Pro Cys Gly Asp Leu Phe Val Lys Ser Leu Gly Thr Gly Gln Pro Gly
            660                 665                 670
Glu Val Arg Leu His His Ser Pro Pro Leu Pro Ser Cys Val Ala Leu
        675                 680                 685
Val Asn Gln Pro Pro His Ser Pro Trp Ser Phe Ser Arg Val
    690                 695                 700
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<210> 24
<211> 2094
<212> DNA
<213> homo sapiens

<400> 24

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gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg     180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt     240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg     300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg     360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc     420
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caccgtgtgg cccgtgtggc tcgygtctgc aagggagacc tgggagggaa gaagatcctg     840
cagaagaagt ggacttcctt cctgaaagcc cgtctcatct gccacattcc actgtatgag     900
acactgcgtg gggtctgcag cctggatgct gaaacctcaa gccgtacaca cttctatgca     960
gccttcacgc tgagcacaca gtggaagacc ctggaggcct cagccatctg ccgctatgac    1020
ctggcagaga tccaggctgt ctttgcagga ccctatatgg aataccagga tggttcccgg    1080
cgctggggtc gctatgaggg tggggtgcct gagccccggc ctggctcgtg tatcacagat    1140
tcattgcgca gccaaggcta caattcatcc caagacttgc catccctggt cctggacttt    1200
gtaaagttgc acccactgat ggctcggccc gttgtgccca cacgtggacg gcccctgctg    1260
ctcaagcgca acatacgcta cacacacctt acagggacac ctgtcaccac gcctgctgga    1320
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ctgggctctg ggatgcacat tattgaagag acacaagtgt tcagggagtc ccagtctgtg    1440
gaaaatctag tcatctctct attgcagcac agcctctatg tgggggctcc tagcggagtc    1500
atccagctac cactctccag ctgctcccgc taccgatcct gctatgactg catcttggcc    1560
cgagacccct actgtggctg ggaccctggc acccatgcct gcgcagcagc caccaccata    1620
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gccaacagga cagcactgat acaggacata gagagaggaa atcgaggctg tgagagcagc 1680
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gtacattcac atgcacacat ggaagaatgt ttatcggctg ggctgcagtg cccccaccct 1860
caccttctcc tggtgcattc ttgtttcatc cctgcttctg gacttggggt accctcccaa 1920
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ttgggaacgg gccagcctgg ggaggtaaga ctgcatcact cccctcctct cccttcctgt 2040
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<210> 25
<211> 697
<212> PRT
<213> homo sapiens

<400> 25
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20 25 30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
35 40 45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
50 55 60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65 70 75 80
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
85 90 95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
100 105 110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
115 120 125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
130 135 140
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145 150 155 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
165 170 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
180 185 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
195 200 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
210 215 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225 230 235 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
245 250 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
260 265 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
275 280 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
290 295 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305 310 315 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile

```
                325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
            340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
        355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
    370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
            420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
        435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
    450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala
                485                 490                 495
Pro Ser Gly Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg
            500                 505                 510
Ser Cys Tyr Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp
        515                 520                 525
Pro Gly Thr His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Thr
    530                 535                 540
Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu Ser Ser
545                 550                 555                 560
Arg Asp Thr Gly Arg Ala Leu Gln Val His Met Gly Ser Met Ser Pro
                565                 570                 575
Pro Ser Ala Trp Pro Cys Val Leu Asp Gly Pro Glu Thr Arg Gln Val
            580                 585                 590
Leu Cys Gln Pro Pro Lys Pro Cys Val His Ser His Ala His Met Glu
        595                 600                 605
Glu Cys Leu Ser Ala Gly Leu Gln Cys Pro His Pro His Leu Leu Leu
    610                 615                 620
Val His Ser Cys Phe Ile Pro Ala Ser Gly Leu Gly Val Pro Ser Gln
625                 630                 635                 640
Leu Pro His Pro Ile Trp Ser Ser Ser Pro Ala Pro Cys Gly Asp Leu
                645                 650                 655
Phe Val Lys Ser Leu Gly Thr Gly Gln Pro Gly Glu Val Arg Leu His
            660                 665                 670
His Ser Pro Pro Leu Pro Ser Cys Val Ala Leu Val Asn Gln Pro Pro
        675                 680                 685
His Ser Pro Trp Ser Phe Ser Arg Val
    690                 695
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<210> 26
<211> 2532
<212> DNA
<213> homo sapiens

<400> 26
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ccctcactgc ggagaccgtc tagagaacta gatgccaccc ctcggatgac cataccctat 120

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gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg     180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt     240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg     300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg     360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc     420
ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag     480
gagaagtgtc cttatgaccc agcccgtggc ttcacaggcc tcatcattga tggaggcctc     540
tacacagcca ctaggtatga attccggagc attcctgaca tccgccggag ccgccaccca     600
cactccctga gaactgagga gacaccaatg cattggctca atgatgcgga gtttgtgttc     660
tccgtcctcg tgcgggagag caaggccagt gcagtgggtg atgatgacaa ggtgtactac     720
ttcttcacgg agcgtgccac tgaggagggc tctggcagct tcactcagag ccgcagcagt     780
caccgtgtgg cccgtgtggc tcgygtctgc aagggagacc tgggagggaa gaagatcctg     840
cagaagaagt ggacttcctt cctgaaagcc cgtctcatct gccacattcc actgtatgag     900
acactgcgtg gggtctgcag cctggatgct gaaacctcaa gccgtacaca cttctatgca     960
gccttcacgc tgagcacaca gtggaagacc ctggaggcct cagccatctg ccgctatgac    1020
ctggcagaga tccaggctgt ctttgcagga ccctatatgg aataccagga tggttcccgg    1080
cgctggggtc gctatgaggg tggggtgcct gagccccggc ctggctcgtg tatcacagat    1140
tcattgcgca gccaaggcta caattcatcc caagacttgc catccctggt cctggacttt    1200
gtaaagttgc acccactgat ggctcggccc gttgtgccca cacgtggacg gcccctgctg    1260
ctcaagcgca acatacgcta cacacacctt acagggacac ctgtcaccac gcctgctgga    1320
cctacctatg acctgctctt tctgggcaca gctgatggct ggatccacaa ggccgtagtc    1380
ctgggctctg ggatgcacat tattgaagag acacaagtgt tcagggagtc ccagtctgtg    1440
gaaaatctag tcatctctct attgcagcac agcctctatg tgggggctcc tagcggagtc    1500
atccagctac cactctccag ctgctcccgc taccgatcct gctatgactg catcttggcc    1560
cgagacccct actgtggctg ggaccctggc acccatgcct gcgcagcagc caccaccata    1620
gccaacaggt cccagggaag caggacagca ctgatacagg acatagagag aggaaatcga    1680
ggctgtgaga gcagcaggga tacagggcca ccaccaccac tgaagacccg ctctgtgctc    1740
cggggtgatg atgtcctcct gccctgtgac cagccatcca acctggcccg ggccttgtgg    1800
ctactcaatg ggagcatggg cctgagcgat gggcagggtg gctaccgtgt gggcgtggac    1860
gggctgctgg ttacagatgc acagcctgag cacagtggca actatggctg ctatgccgag    1920
gaaaatggcc tccgcaccct gctggcctcc tatagtctca cagtccggcc agccactcct    1980
gccccagctc caaaagcccc tgccacacct ggggcacagc tggcacctga tgtgagactg    2040
ctctatgtgc tagccattgc cgcgcttggt ggccyctgcc tcatcctggc ctcctccctc    2100
ctctatgtgg cctgtctgcg ggaaggcaga cgagggcgcc gacggaaata ctcactgggt    2160
cgggccagcc gggcaggagg atctgcggtg caactgcaga cagtctcagg ccagtgtcct    2220
ggagaggaag atgagggtga tgatgagggg gctgggggcc tggagggcag ctgtctccag    2280
atcatccctg gggagggagc cccagcccca ccacccccac cgcccccacc gccaccggct    2340
gagctgacca atggcttggt ggcactgccc agccggctgc ggaggatgaa tggcaatagc    2400
tatgtgcttc tgaggcagag caacaatgga gtaccagcag ggccctgctc cttcgccgag    2460
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agctctgtct ga                                                        2532
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<210> 27
<211> 843
<212> PRT
<213> homo sapiens

<400> 27

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Met Trp Gly Arg Leu Trp Pro Leu Leu Leu Ser Ile Leu Thr Ala Thr
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Ala Val Pro Gly Pro Ser Leu Arg Arg Pro Ser Arg Glu Leu Asp Ala
            20                  25                  30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
        35                  40                  45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
    50                  55                  60
```

```
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65                  70                  75                  80
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                85                  90                  95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
            100                 105                 110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
        115                 120                 125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
    130                 135                 140
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
                165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
            180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
        195                 200                 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
    210                 215                 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225                 230                 235                 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
                245                 250                 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
            260                 265                 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
        275                 280                 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
    290                 295                 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305                 310                 315                 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile
                325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
            340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
        355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
    370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
            420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
        435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
    450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala
                485                 490                 495
Pro Ser Gly Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg
            500                 505                 510
```

```
Ser Cys Tyr Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp
        515                 520                 525
Pro Gly Thr His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Ser
    530                 535                 540
Gln Gly Ser Arg Thr Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg
545                 550                 555                 560
Gly Cys Glu Ser Ser Arg Asp Thr Gly Pro Pro Pro Pro Leu Lys Thr
                565                 570                 575
Arg Ser Val Leu Arg Gly Asp Asp Val Leu Leu Pro Cys Asp Gln Pro
            580                 585                 590
Ser Asn Leu Ala Arg Ala Leu Trp Leu Leu Asn Gly Ser Met Gly Leu
        595                 600                 605
Ser Asp Gly Gln Gly Gly Tyr Arg Val Gly Val Asp Gly Leu Leu Val
    610                 615                 620
Thr Asp Ala Gln Pro Glu His Ser Gly Asn Tyr Gly Cys Tyr Ala Glu
625                 630                 635                 640
Glu Asn Gly Leu Arg Thr Leu Leu Ala Ser Tyr Ser Leu Thr Val Arg
                645                 650                 655
Pro Ala Thr Pro Ala Pro Ala Pro Lys Ala Pro Ala Thr Pro Gly Ala
            660                 665                 670
Gln Leu Ala Pro Asp Val Arg Leu Leu Tyr Val Leu Ala Ile Ala Ala
        675                 680                 685
Leu Gly Gly Leu Cys Leu Ile Leu Ala Ser Ser Leu Leu Tyr Val Ala
    690                 695                 700
Cys Leu Arg Glu Gly Arg Arg Gly Arg Arg Arg Lys Tyr Ser Leu Gly
705                 710                 715                 720
Arg Ala Ser Arg Ala Gly Gly Ser Ala Val Gln Leu Gln Thr Val Ser
                725                 730                 735
Gly Gln Cys Pro Gly Glu Glu Asp Glu Gly Asp Asp Glu Gly Ala Gly
            740                 745                 750
Gly Leu Glu Gly Ser Cys Leu Gln Ile Ile Pro Gly Glu Gly Ala Pro
        755                 760                 765
Ala Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Glu Leu Thr Asn
    770                 775                 780
Gly Leu Val Ala Leu Pro Ser Arg Leu Arg Arg Met Asn Gly Asn Ser
785                 790                 795                 800
Tyr Val Leu Leu Arg Gln Ser Asn Asn Gly Val Pro Ala Gly Pro Cys
                805                 810                 815
Ser Phe Ala Glu Glu Leu Ser Arg Ile Leu Glu Lys Arg Lys His Thr
            820                 825                 830
Gln Leu Val Glu Gln Leu Asp Glu Ser Ser Val
        835                 840
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<210> 28
<211> 2517
<212> DNA
<213> homo sapiens

<400> 28
atgtggggga ggctctggcc cctcctcctc agcatcctca cagcaactgc agtcccagga 60
ccctcactgc ggagaccgtc tagagaacta gatgccaccc ctcggatgac cataccctat 120
gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg 180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt 240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg 300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg 360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc 420

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ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag     480
gagaagtgtc cttatgaccc agcccgtggc ttcacaggcc tcatcattga tggaggcctc     540
tacacagcca ctaggtatga attccggagc attcctgaca tccgccggag ccgccaccca     600
cactccctga gaactgagga gacaccaatg cattggctca atgatgcgga gtttgtgttc     660
tccgtcctcg tgcgggagag caaggccagt gcagtgggtg atgatgacaa ggtgtactac     720
ttcttcacgg agcgtgccac tgaggagggc tctggcagct tcactcagag ccgcagcagt     780
caccgtgtgg cccgtgtggc tcgygtctgc aagggagacc tgggagggaa gaagatcctg     840
cagaagaagt ggacttcctt cctgaaagcc cgtctcatct gccacattcc actgtatgag     900
acactgcgtg gggtctgcag cctggatgct gaaacctcaa gccgtacaca cttctatgca     960
gccttcacgc tgagcacaca gtggaagacc ctggaggcct cagccatctg ccgctatgac    1020
ctggcagaga tccaggctgt ctttgcagga ccctatatgg aataccagga tggttcccgg    1080
cgctggggtc gctatgaggg tggggtgcct gagccccggc ctggctcgtg tatcacagat    1140
tcattgcgca gccaaggcta caattcatcc caagacttgc catccctggt cctggacttt    1200
gtaaagttgc acccactgat ggctcggccc gttgtgccca cacgtggacg gcccctgctg    1260
ctcaagcgca acatacgcta cacacacctt acagggacac ctgtcaccac gcctgctgga    1320
cctacctatg acctgctctt tctgggcaca gctgatggct ggatccacaa ggccgtagtc    1380
ctgggctctg ggatgcacat tattgaagag acacaagtgt tcagggagtc ccagtctgtg    1440
gaaaatctag tcatctctct attgcagcac agcctctatg tgggggctcc tagcggagtc    1500
atccagctac cactctccag ctgctcccgc taccgatcct gctatgactg catcttggcc    1560
cgagacccct actgtggctg ggaccctggc acccatgcct gcgcagcagc caccaccata    1620
gccaacagga cagcactgat acaggacata gagagaggaa atcgaggctg tgagagcagc    1680
agggatacag ggccaccacc accactgaag acccgctctg tgctccgggg tgatgatgtc    1740
ctcctgccct gtgaccagcc atccaacctg gcccgggcct tgtggctact caatgggagc    1800
atgggcctga gcgatgggca gggtggctac cgtgtgggcg tggacgggct gctggttaca    1860
gatgcacagc ctgagcacag tggcaactat ggctgctatg ccgaggaaaa tggcctccgc    1920
accctgctgg cctcctatag tctcacagtc cggccagcca ctcctgcccc agctccaaaa    1980
gcccctgcca cacctggggc acagctggca cctgatgtga gactgctcta tgtgctagcc    2040
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ggaggatctg cggtgcaact gcagacagtc tcaggccagt gtcctggaga ggaagatgag    2220
ggtgatgatg agggggctgg gggcctggag ggcagctgtc tccagatcat ccctggggag    2280
ggagccccag ccccaccacc cccaccgccc ccaccgccac cggctgagct gaccaatggc    2340
ttggtggcac tgcccagccg gctgcggagg atgaatggca atagctatgt gcttctgagg    2400
cagagcaaca atggagtacc agcagggccc tgctccttcg ccgaggaact cagccgcatc    2460
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<210> 29
<211> 838
<212> PRT
<213> homo sapiens

<400> 29

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Met Trp Gly Arg Leu Trp Pro Leu Leu Leu Ser Ile Leu Thr Ala Thr
 1               5                  10                  15
Ala Val Pro Gly Pro Ser Leu Arg Arg Pro Ser Arg Glu Leu Asp Ala
            20                  25                  30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
        35                  40                  45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
    50                  55                  60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65                  70                  75                  80
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                85                  90                  95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
            100                 105                 110
```

```
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
        115                 120                 125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
    130                 135                 140
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
                165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
            180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
        195                 200                 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
    210                 215                 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225                 230                 235                 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
                245                 250                 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
            260                 265                 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
        275                 280                 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
    290                 295                 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305                 310                 315                 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile
                325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
            340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
        355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
    370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
            420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
        435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
    450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala
                485                 490                 495
Pro Ser Gly Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg
            500                 505                 510
Ser Cys Tyr Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp
        515                 520                 525
Pro Gly Thr His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Thr
    530                 535                 540
Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu Ser Ser
545                 550                 555                 560
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```
Arg Asp Thr Gly Pro Pro Pro Pro Leu Lys Thr Arg Ser Val Leu Arg
                565                 570                 575
Gly Asp Asp Val Leu Leu Pro Cys Asp Gln Pro Ser Asn Leu Ala Arg
            580                 585                 590
Ala Leu Trp Leu Leu Asn Gly Ser Met Gly Leu Ser Asp Gly Gln Gly
        595                 600                 605
Gly Tyr Arg Val Gly Val Asp Gly Leu Leu Val Thr Asp Ala Gln Pro
    610                 615                 620
Glu His Ser Gly Asn Tyr Gly Cys Tyr Ala Glu Glu Asn Gly Leu Arg
625                 630                 635                 640
Thr Leu Leu Ala Ser Tyr Ser Leu Thr Val Arg Pro Ala Thr Pro Ala
                645                 650                 655
Pro Ala Pro Lys Ala Pro Ala Thr Pro Gly Ala Gln Leu Ala Pro Asp
            660                 665                 670
Val Arg Leu Leu Tyr Val Leu Ala Ile Ala Ala Leu Gly Gly Leu Cys
        675                 680                 685
Leu Ile Leu Ala Ser Ser Leu Leu Tyr Val Ala Cys Leu Arg Glu Gly
    690                 695                 700
Arg Arg Gly Arg Arg Arg Lys Tyr Ser Leu Gly Arg Ala Ser Arg Ala
705                 710                 715                 720
Gly Gly Ser Ala Val Gln Leu Gln Thr Val Ser Gly Gln Cys Pro Gly
                725                 730                 735
Glu Glu Asp Glu Gly Asp Asp Glu Gly Ala Gly Gly Leu Glu Gly Ser
            740                 745                 750
Cys Leu Gln Ile Ile Pro Gly Glu Gly Ala Pro Ala Pro Pro Pro Pro
        755                 760                 765
Pro Pro Pro Pro Pro Pro Ala Glu Leu Thr Asn Gly Leu Val Ala Leu
    770                 775                 780
Pro Ser Arg Leu Arg Arg Met Asn Gly Asn Ser Tyr Val Leu Leu Arg
785                 790                 795                 800
Gln Ser Asn Asn Gly Val Pro Ala Gly Pro Cys Ser Phe Ala Glu Glu
                805                 810                 815
Leu Ser Arg Ile Leu Glu Lys Arg Lys His Thr Gln Leu Val Glu Gln
            820                 825                 830
Leu Asp Glu Ser Ser Val
        835
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<210> 30
<211> 2613
<212> DNA
<213> homo sapiens

<400> 30

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ccctcactgc ggagaccgtc tagagaacta gatgccaccc ctcggatgac cataccctat     120
gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg     180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt     240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg     300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg     360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc     420
ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag     480
gagaagtgtc cttatgaccc agcccgtggc ttcacaggcc tcatcattga tggaggcctc     540
tacacagcca ctaggtatga attccggagc attcctgaca tccgccggag ccgccaccca     600
cactccctga gaactgagga gacaccaatg cattggctca atgatgcgga gtttgtgttc     660
tccgtcctcg tgcgggagag caaggccagt gcagtgggtg atgatgacaa ggtgtactac     720
ttcttcacgg agcgtgccac tgaggagggc tctggcagct tcactcagag ccgcagcagt     780
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caccgtgtgg cccgtgtggc tcgygtctgc aagggagacc tgggagggaa gaagatcctg 840
cagaagaagt ggacttcctt cctgaaagcc cgtctcatct gccacattcc actgtatgag 900
acactgcgtg gggtctgcag cctggatgct gaaacctcaa gccgtacaca cttctatgca 960
gccttcacgc tgagcacaca gtggaagacc ctggaggcct cagccatctg ccgctatgac 1020
ctggcagaga tccaggctgt ctttgcagga ccctatatgg aataccagga tggttcccgg 1080
cgctggggtc gctatgaggg tggggtgcct gagccccggc ctggctcgtg tatcacagat 1140
tcattgcgca gccaaggcta caattcatcc caagacttgc catccctggt cctggacttt 1200
gtaaagttgc acccactgat ggctcggccc gttgtgccca cacgtggacg gcccctgctg 1260
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gccaacaggt cccagggaag caggacagca ctgatacagg acatagagag aggaaatcga 1680
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gccccagctc caaaagcccc tgccacacct ggggcacagc tggcacctga tgtgagactg 2040
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cgggccagcc gggcaggagg atctgcggtg caactgcaga cagtctcagg cagggctctg 2220
caggtccata tgggctcaat gtcaccaccc tctgcatggc cctgtgtgct ggatggtcct 2280
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gaagaatgtt tatcggctgg gctgcagtgc ccccaccctc accttctcct ggtgcattct 2400
tgtttcatcc ctgcttctgg acttggggta ccctcccaat tgccacatcc tatctggtcc 2460
tcttccccag ccccatgtgg tgacctcttt gtcaagagct tgggaacggg ccagcctggg 2520
gaggtaagac tgcatcactc ccctcctctc ccttcctgtg tggcccttgt gaatcagcct 2580
ccccactctc cttggtcatt ctcaagagta tga 2613

<210> 31
<211> 870
<212> PRT
<213> homo sapiens

<400> 31
Met Trp Gly Arg Leu Trp Pro Leu Leu Leu Ser Ile Leu Thr Ala Thr
 1   5   10   15
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            20   25   30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
        35   40   45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
    50   55   60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65   70   75   80
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                85   90   95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
            100   105   110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
        115   120   125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
    130   135   140

```
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
                165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
            180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
        195                 200                 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
    210                 215                 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225                 230                 235                 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
                245                 250                 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
            260                 265                 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
        275                 280                 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
    290                 295                 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305                 310                 315                 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile
                325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
            340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
        355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
    370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
            420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
        435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
    450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala
                485                 490                 495
Pro Ser Gly Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg
            500                 505                 510
Ser Cys Tyr Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp
        515                 520                 525
Pro Gly Thr His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Ser
    530                 535                 540
Gln Gly Ser Arg Thr Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg
545                 550                 555                 560
Gly Cys Glu Ser Ser Arg Asp Thr Gly Pro Pro Pro Pro Leu Lys Thr
                565                 570                 575
Arg Ser Val Leu Arg Gly Asp Asp Val Leu Leu Pro Cys Asp Gln Pro
            580                 585                 590
```

```
Ser Asn Leu Ala Arg Ala Leu Trp Leu Leu Asn Gly Ser Met Gly Leu
        595                 600                 605
Ser Asp Gly Gln Gly Gly Tyr Arg Val Gly Val Asp Gly Leu Leu Val
    610                 615                 620
Thr Asp Ala Gln Pro Glu His Ser Gly Asn Tyr Gly Cys Tyr Ala Glu
625                 630                 635                 640
Glu Asn Gly Leu Arg Thr Leu Leu Ala Ser Tyr Ser Leu Thr Val Arg
                645                 650                 655
Pro Ala Thr Pro Ala Pro Ala Pro Lys Ala Pro Ala Thr Pro Gly Ala
            660                 665                 670
Gln Leu Ala Pro Asp Val Arg Leu Leu Tyr Val Leu Ala Ile Ala Ala
        675                 680                 685
Leu Gly Gly Leu Cys Leu Ile Leu Ala Ser Ser Leu Leu Tyr Val Ala
    690                 695                 700
Cys Leu Arg Glu Gly Arg Arg Gly Arg Arg Arg Lys Tyr Ser Leu Gly
705                 710                 715                 720
Arg Ala Ser Arg Ala Gly Gly Ser Ala Val Gln Leu Gln Thr Val Ser
                725                 730                 735
Gly Arg Ala Leu Gln Val His Met Gly Ser Met Ser Pro Pro Ser Ala
            740                 745                 750
Trp Pro Cys Val Leu Asp Gly Pro Glu Thr Arg Gln Val Leu Cys Gln
        755                 760                 765
Pro Pro Lys Pro Cys Val His Ser His Ala His Met Glu Glu Cys Leu
    770                 775                 780
Ser Ala Gly Leu Gln Cys Pro His Pro His Leu Leu Leu Val His Ser
785                 790                 795                 800
Cys Phe Ile Pro Ala Ser Gly Leu Gly Val Pro Ser Gln Leu Pro His
                805                 810                 815
Pro Ile Trp Ser Ser Ser Pro Ala Pro Cys Gly Asp Leu Phe Val Lys
            820                 825                 830
Ser Leu Gly Thr Gly Gln Pro Gly Glu Val Arg Leu His His Ser Pro
        835                 840                 845
Pro Leu Pro Ser Cys Val Ala Leu Val Asn Gln Pro Pro His Ser Pro
    850                 855                 860
Trp Ser Phe Ser Arg Val
865                 870
```

<210> 32
<211> 2598
<212> DNA
<213> homo sapiens

<400> 32

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ccctcactgc ggagaccgtc tagagaacta gatgccaccc ctcggatgac cataccctat     120
gaagagctct ctgggacccg gcacttcaag ggccaagccc agaactactc aacactgctg     180
ctggaggagg cctcagcaag gctgctggtg ggagcccgag gtgccctgtt ctctctcagt     240
gccaacgaca taggagatgg ggctcacaaa gagatccact gggaagcctc cccagagatg     300
caaagcaaat gtcatcaaaa agggaaaaac aaccagacgg agtgctttaa ccatgtgcgg     360
ttcctgcagc ggctcaattc tacccacctc tatgcatgtg ggactcacgc cttccagccc     420
ctctgtgcag ccattgatgc tgaggccttc accttgccaa ccagcttcga ggaggggaag     480
gagaagtgtc cttatgaccc agcccgtggc ttcacaggcc tcatcattga tggaggcctc     540
tacacagcca ctaggtatga attccggagc attcctgaca tccgccggag ccgccaccca     600
cactccctga gaactgagga gacaccaatg cattggctca atgatgcgga gtttgtgttc     660
tccgtcctcg tgcgggagag caaggccagt gcagtgggtg atgatgacaa ggtgtactac     720
ttcttcacgg agcgtgccac tgaggagggc tctggcagct tcactcagag ccgcagcagt     780
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caccgtgtgg cccgtgtggc tcgygtctgc aagggagacc tgggagggaa gaagatcctg 840
cagaagaagt ggacttcctt cctgaaagcc cgtctcatct gccacattcc actgtatgag 900
acactgcgtg gggtctgcag cctggatgct gaaacctcaa gccgtacaca cttctatgca 960
gccttcacgc tgagcacaca gtggaagacc ctggaggcct cagccatctg ccgctatgac 1020
ctggcagaga tccaggctgt ctttgcagga ccctatatgg aataccagga tggttcccgg 1080
cgctggggtc gctatgaggg tggggtgcct gagccccggc ctggctcgtg tatcacagat 1140
tcattgcgca gccaaggcta caattcatcc caagacttgc catccctggt cctggacttt 1200
gtaaagttgc acccactgat ggctcggccc gttgtgccca cacgtggacg gcccctgctg 1260
ctcaagcgca acatacgcta cacacacctt acagggacac ctgtcaccac gcctgctgga 1320
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cgagacccct actgtggctg ggaccctggc acccatgcct gcgcagcagc caccaccata 1620
gccaacagga cagcactgat acaggacata gagagaggaa atcgaggctg tgagagcagc 1680
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tctggacttg gggtaccctc ccaattgcca catcctatct ggtcctcttc cccagcccca 2460
tgtggtgacc tctttgtcaa gagcttggga acgggccagc ctggggaggt aagactgcat 2520
cactccctc ctctcccttc ctgtgtggcc cttgtgaatc agcctcccca ctctccttgg 2580
tcattctcaa gagtatga 2598

<210> 33
<211> 865
<212> PRT
<213> homo sapiens

<400> 33
Met Trp Gly Arg Leu Trp Pro Leu Leu Leu Ser Ile Leu Thr Ala Thr
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Ala Val Pro Gly Pro Ser Leu Arg Arg Pro Ser Arg Glu Leu Asp Ala
            20   25   30
Thr Pro Arg Met Thr Ile Pro Tyr Glu Glu Leu Ser Gly Thr Arg His
        35   40   45
Phe Lys Gly Gln Ala Gln Asn Tyr Ser Thr Leu Leu Leu Glu Glu Ala
    50   55   60
Ser Ala Arg Leu Leu Val Gly Ala Arg Gly Ala Leu Phe Ser Leu Ser
65   70   75   80
Ala Asn Asp Ile Gly Asp Gly Ala His Lys Glu Ile His Trp Glu Ala
                85   90   95
Ser Pro Glu Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln
            100   105   110
Thr Glu Cys Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr
        115   120   125
His Leu Tyr Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala
    130   135   140

```
Ile Asp Ala Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys
145                 150                 155                 160
Glu Lys Cys Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile
                165                 170                 175
Asp Gly Gly Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro
            180                 185                 190
Asp Ile Arg Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr
        195                 200                 205
Pro Met His Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val
    210                 215                 220
Arg Glu Ser Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr
225                 230                 235                 240
Phe Phe Thr Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln
                245                 250                 255
Ser Arg Ser Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly
            260                 265                 270
Asp Leu Gly Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu
        275                 280                 285
Lys Ala Arg Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly
    290                 295                 300
Val Cys Ser Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala
305                 310                 315                 320
Ala Phe Thr Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile
                325                 330                 335
Cys Arg Tyr Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr
            340                 345                 350
Met Glu Tyr Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly
        355                 360                 365
Val Pro Glu Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser
    370                 375                 380
Gln Gly Tyr Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe
385                 390                 395                 400
Val Lys Leu His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly
                405                 410                 415
Arg Pro Leu Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly
            420                 425                 430
Thr Pro Val Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu
        435                 440                 445
Gly Thr Ala Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly
    450                 455                 460
Met His Ile Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val
465                 470                 475                 480
Glu Asn Leu Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala
                485                 490                 495
Pro Ser Gly Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg
            500                 505                 510
Ser Cys Tyr Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp
        515                 520                 525
Pro Gly Thr His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Thr
    530                 535                 540
Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu Ser Ser
545                 550                 555                 560
Arg Asp Thr Gly Pro Pro Pro Pro Leu Lys Thr Arg Ser Val Leu Arg
                565                 570                 575
Gly Asp Asp Val Leu Leu Pro Cys Asp Gln Pro Ser Asn Leu Ala Arg
            580                 585                 590
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Ala Leu Trp Leu Leu Asn Gly Ser Met Gly Leu Ser Asp Gly Gln Gly
        595                 600                 605
Gly Tyr Arg Val Gly Val Asp Gly Leu Leu Val Thr Asp Ala Gln Pro
    610                 615                 620
Glu His Ser Gly Asn Tyr Gly Cys Tyr Ala Glu Glu Asn Gly Leu Arg
625                 630                 635                 640
Thr Leu Leu Ala Ser Tyr Ser Leu Thr Val Arg Pro Ala Thr Pro Ala
                645                 650                 655
Pro Ala Pro Lys Ala Pro Ala Thr Pro Gly Ala Gln Leu Ala Pro Asp
            660                 665                 670
Val Arg Leu Leu Tyr Val Leu Ala Ile Ala Ala Leu Gly Gly Leu Cys
        675                 680                 685
Leu Ile Leu Ala Ser Ser Leu Leu Tyr Val Ala Cys Leu Arg Glu Gly
    690                 695                 700
Arg Arg Gly Arg Arg Arg Lys Tyr Ser Leu Gly Arg Ala Ser Arg Ala
705                 710                 715                 720
Gly Gly Ser Ala Val Gln Leu Gln Thr Val Ser Gly Arg Ala Leu Gln
                725                 730                 735
Val His Met Gly Ser Met Ser Pro Pro Ser Ala Trp Pro Cys Val Leu
            740                 745                 750
Asp Gly Pro Glu Thr Arg Gln Val Leu Cys Gln Pro Pro Lys Pro Cys
        755                 760                 765
Val His Ser His Ala His Met Glu Glu Cys Leu Ser Ala Gly Leu Gln
    770                 775                 780
Cys Pro His Pro His Leu Leu Leu Val His Ser Cys Phe Ile Pro Ala
785                 790                 795                 800
Ser Gly Leu Gly Val Pro Ser Gln Leu Pro His Pro Ile Trp Ser Ser
                805                 810                 815
Ser Pro Ala Pro Cys Gly Asp Leu Phe Val Lys Ser Leu Gly Thr Gly
            820                 825                 830
Gln Pro Gly Glu Val Arg Leu His His Ser Pro Pro Leu Pro Ser Cys
        835                 840                 845
Val Ala Leu Val Asn Gln Pro Pro His Ser Pro Trp Ser Phe Ser Arg
    850                 855                 860
Val
865
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<210> 34
<211> 351
<212> DNA
<213> homo sapiens

<400> 34
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cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg 180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc 240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac 300
ccacactccc tgagaactga ggagacacca atgcattggc tcaatggtta g 351

<210> 35
<211> 116
<212> PRT
<213> homo sapiens

<400> 35

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Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln Thr Glu Cys
 1               5                  10                  15
Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr His Leu Tyr
            20                  25                  30
Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala Ile Asp Ala
        35                  40                  45
Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys Glu Lys Cys
    50                  55                  60
Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile Asp Gly Gly
65                  70                  75                  80
Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro Asp Ile Arg
                85                  90                  95
Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr Pro Met His
            100                 105                 110
Trp Leu Asn Gly
        115
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<210> 36
<211> 1194
<212> DNA
<213> homo sapiens

<400> 36

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cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg     180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc     240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac     300
ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg     360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac     420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc     480
agtcaccgtg tggcccgtgt ggctcgygtc tgcaagggag acctgggagg gaagaagatc     540
ctgcagaaga agtggacttc cttcctgaaa gcccgtctca tctgccacat tccactgtat     600
gagacactgc gtggggtctg cagcctggat gctgaaacct caagccgtac acacttctat     660
gcagccttca cgctgagcac acagtggaag accctggagg cctcagccat ctgccgctat     720
gacctggcag agatccaggc tgtctttgca ggaccctata tggaatacca ggatggttcc     780
cggcgctggg gtcgctatga gggtggggtg cctgagcccc ggcctggctc gtgtatcaca     840
gattcattgc gcagccaagg ctacaattca tcccaagact tgccatccct ggtcctggac     900
tttgtaaagt tgcacccact gatggctcgg cccgttgtgc ccacacgtgg acggcccctg     960
ctgctcaagc gcaacatacg ctacacacac cttacaggga cacctgtcac cacgcctgct    1020
ggacctacct atgacctgct ctttctgggc acagctgatg gctggatcca caaggccgta    1080
gtcctgggct ctgggatgca cattattgaa gagacacaag tgttcaggga gtcccagtct    1140
gtggaaaatc tagtcatctc tctattgcag gtagcccttc tctgtgaccc ttaa          1194
```

<210> 37
<211> 397
<212> PRT
<213> homo sapiens

<400> 37

```
Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln Thr Glu Cys
 1               5                  10                  15
Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr His Leu Tyr
            20                  25                  30
Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala Ile Asp Ala
        35                  40                  45
```

```
Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys Glu Lys Cys
    50                  55                  60
Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile Asp Gly Gly
65                  70                  75                  80
Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro Asp Ile Arg
                85                  90                  95
Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr Pro Met His
            100                 105                 110
Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val Arg Glu Ser
        115                 120                 125
Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr Phe Phe Thr
    130                 135                 140
Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln Ser Arg Ser
145                 150                 155                 160
Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly Asp Leu Gly
                165                 170                 175
Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu Lys Ala Arg
            180                 185                 190
Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly Val Cys Ser
        195                 200                 205
Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala Ala Phe Thr
    210                 215                 220
Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile Cys Arg Tyr
225                 230                 235                 240
Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr Met Glu Tyr
                245                 250                 255
Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly Val Pro Glu
            260                 265                 270
Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser Gln Gly Tyr
        275                 280                 285
Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe Val Lys Leu
    290                 295                 300
His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly Arg Pro Leu
305                 310                 315                 320
Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly Thr Pro Val
                325                 330                 335
Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu Gly Thr Ala
            340                 345                 350
Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly Met His Ile
        355                 360                 365
Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val Glu Asn Leu
    370                 375                 380
Val Ile Ser Leu Leu Gln Val Ala Leu Leu Cys Asp Pro
385                 390                 395
```

<210> 38
<211> 1812
<212> DNA
<213> homo sapiens

<400> 38
atgcaaagca aatgtcatca aaaagggaaa aacaaccaga cggagtgctt taaccatgtg 60
cggttcctgc agcggctcaa ttctacccac ctctatgcat gtgggactca cgccttccag 120
cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg 180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc 240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac 300

```
ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg      360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac      420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc      480
agtcaccgtg tggcccgtgt ggctcgygtc tgcaagggag acctgggagg gaagaagatc      540
ctgcagaaga agtggacttc cttcctgaaa gcccgtctca tctgccacat tccactgtat      600
gagacactgc gtggggtctg cagcctggat gctgaaacct caagccgtac acacttctat      660
gcagccttca cgctgagcac acagtggaag accctggagg cctcagccat ctgccgctat      720
gacctggcag agatccaggc tgtctttgca ggaccctata tggaatacca ggatggttcc      780
cggcgctggg gtcgctatga gggtggggtg cctgagcccc ggcctggctc gtgtatcaca      840
gattcattgc gcagccaagg ctacaattca tcccaagact tgccatccct ggtcctggac      900
tttgtaaagt tgcacccact gatggctcgg cccgttgtgc ccacacgtgg acggcccctg      960
ctgctcaagc gcaacatacg ctacacacac cttacaggga cacctgtcac cacgcctgct     1020
ggacctacct atgacctgct ctttctgggc acagctgatg gctggatcca caaggccgta     1080
gtcctgggct ctgggatgca cattattgaa gagacacaag tgttcaggga gtcccagtct     1140
gtggaaaatc tagtcatctc tctattgcag cacagcctct atgtgggggc tcctagcgga     1200
gtcatccagc taccactctc cagctgctcc cgctaccgat cctgctatga ctgcatcttg     1260
gcccgagacc cctactgtgg ctgggaccct ggcacccatg cctgcgcagc agccaccacc     1320
atagccaaca ggtcccaggg aagcaggaca gcactgatac aggacataga gagaggaaat     1380
cgaggctgtg agagcagcag ggatacaggc agggctctgc aggtccatat gggctcaatg     1440
tcaccaccct ctgcatggcc ctgtgtgctg gatggtcctg aaaccagaca agtcctctgc     1500
cagccaccta agccctgcgt acattcacat gcacacatgg aagaatgttt atcggctggg     1560
ctgcagtgcc cccaccctca ccttctcctg gtgcattctt gtttcatccc tgcttctgga     1620
cttggggtac cctcccaatt gccacatcct atctggtcct cttccccagc cccatgtggt     1680
gacctctttg tcaagagctt gggaacgggc cagcctgggg aggtaagact gcatcactcc     1740
cctcctctcc cttcctgtgt ggcccttgtg aatcagcctc cccactctcc ttggtcattc     1800
tcaagagtat ga                                                         1812
```

<210> 39
<211> 603
<212> PRT
<213> homo sapiens

<400> 39

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Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln Thr Glu Cys
 1               5                  10                  15
Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr His Leu Tyr
            20                  25                  30
Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala Ile Asp Ala
        35                  40                  45
Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys Glu Lys Cys
    50                  55                  60
Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile Asp Gly Gly
65                  70                  75                  80
Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro Asp Ile Arg
                85                  90                  95
Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr Pro Met His
            100                 105                 110
Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val Arg Glu Ser
        115                 120                 125
Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr Phe Phe Thr
    130                 135                 140
Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln Ser Arg Ser
145                 150                 155                 160
Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly Asp Leu Gly
                165                 170                 175
Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu Lys Ala Arg
```

```
            180                 185                 190
Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly Val Cys Ser
        195                 200                 205
Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala Ala Phe Thr
    210                 215                 220
Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile Cys Arg Tyr
225                 230                 235                 240
Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr Met Glu Tyr
                245                 250                 255
Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly Val Pro Glu
            260                 265                 270
Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser Gln Gly Tyr
        275                 280                 285
Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe Val Lys Leu
    290                 295                 300
His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly Arg Pro Leu
305                 310                 315                 320
Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly Thr Pro Val
                325                 330                 335
Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu Gly Thr Ala
            340                 345                 350
Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly Met His Ile
        355                 360                 365
Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val Glu Asn Leu
    370                 375                 380
Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala Pro Ser Gly
385                 390                 395                 400
Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg Ser Cys Tyr
                405                 410                 415
Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp Pro Gly Thr
            420                 425                 430
His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Ser Gln Gly Ser
        435                 440                 445
Arg Thr Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu
    450                 455                 460
Ser Ser Arg Asp Thr Gly Arg Ala Leu Gln Val His Met Gly Ser Met
465                 470                 475                 480
Ser Pro Pro Ser Ala Trp Pro Cys Val Leu Asp Gly Pro Glu Thr Arg
                485                 490                 495
Gln Val Leu Cys Gln Pro Pro Lys Pro Cys Val His Ser His Ala His
            500                 505                 510
Met Glu Glu Cys Leu Ser Ala Gly Leu Gln Cys Pro His Pro His Leu
        515                 520                 525
Leu Leu Val His Ser Cys Phe Ile Pro Ala Ser Gly Leu Gly Val Pro
    530                 535                 540
Ser Gln Leu Pro His Pro Ile Trp Ser Ser Ser Pro Ala Pro Cys Gly
545                 550                 555                 560
Asp Leu Phe Val Lys Ser Leu Gly Thr Gly Gln Pro Gly Glu Val Arg
                565                 570                 575
Leu His His Ser Pro Pro Leu Pro Ser Cys Val Ala Leu Val Asn Gln
            580                 585                 590
Pro Pro His Ser Pro Trp Ser Phe Ser Arg Val
        595                 600
```

<210> 40
<211> 1797

<212> DNA
<213> homo sapiens

<400> 40
atgcaaagca aatgtcatca aaaagggaaa aacaaccaga cggagtgctt taaccatgtg 60
cggttcctgc agcggctcaa ttctacccac ctctatgcat gtgggactca cgccttccag 120
cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg 180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc 240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac 300
ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg 360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac 420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc 480
agtcaccgtg tggcccgtgt ggctcgygtc tgcaagggag acctgggagg gaagaagatc 540
ctgcagaaga agtggacttc cttcctgaaa gcccgtctca tctgccacat tccactgtat 600
gagacactgc gtggggtctg cagcctggat gctgaaacct caagccgtac acacttctat 660
gcagccttca cgctgagcac acagtggaag accctggagg cctcagccat ctgccgctat 720
gacctggcag agatccaggc tgtctttgca ggaccctata tggaatacca ggatggttcc 780
cggcgctggg gtcgctatga gggtggggtg cctgagcccc ggcctggctc gtgtatcaca 840
gattcattgc gcagccaagg ctacaattca tcccaagact tgccatccct ggtcctggac 900
tttgtaaagt tgcacccact gatggctcgg cccgttgtgc ccacacgtgg acggcccctg 960
ctgctcaagc gcaacatacg ctacacacac cttacaggga cacctgtcac cacgcctgct 1020
ggacctacct atgacctgct ctttctgggc acagctgatg gctggatcca caaggccgta 1080
gtcctgggct ctgggatgca cattattgaa gagacacaag tgttcaggga gtcccagtct 1140
gtggaaaatc tagtcatctc tctattgcag cacagcctct atgtgggggc tcctagcgga 1200
gtcatccagc taccactctc cagctgctcc cgctaccgat cctgctatga ctgcatcttg 1260
gcccgagacc cctactgtgg ctgggaccct ggcacccatg cctgcgcagc agccaccacc 1320
atagccaaca ggacagcact gatacaggac atagagagag gaaatcgagg ctgtgagagc 1380
agcagggata caggcagggc tctgcaggtc catatgggct caatgtcacc accctctgca 1440
tggccctgtg tgctggatgg tcctgaaacc agacaagtcc tctgccagcc acctaagccc 1500
tgcgtacatt cacatgcaca catggaagaa tgtttatcgg ctgggctgca gtgcccccac 1560
cctcaccttc tcctggtgca ttcttgtttc atccctgctt ctggacttgg ggtaccctcc 1620
caattgccac atcctatctg gtcctcttcc ccagccccat gtggtgacct ctttgtcaag 1680
agcttgggaa cgggccagcc tggggaggta agactgcatc actcccctcc tctcccttcc 1740
tgtgtggccc ttgtgaatca gcctccccac tctccttggt cattctcaag agtatga 1797

<210> 41
<211> 598
<212> PRT
<213> homo sapiens

<400> 41
Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln Thr Glu Cys
 1   5   10   15
Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr His Leu Tyr
            20   25   30
Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala Ile Asp Ala
        35   40   45
Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys Glu Lys Cys
    50   55   60
Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile Asp Gly Gly
65   70   75   80
Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro Asp Ile Arg
                85   90   95
Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr Pro Met His
            100   105   110
Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val Arg Glu Ser

```
        115                 120                 125
Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr Phe Phe Thr
    130                 135                 140
Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln Ser Arg Ser
145                 150                 155                 160
Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly Asp Leu Gly
                165                 170                 175
Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu Lys Ala Arg
            180                 185                 190
Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly Val Cys Ser
        195                 200                 205
Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala Ala Phe Thr
    210                 215                 220
Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile Cys Arg Tyr
225                 230                 235                 240
Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr Met Glu Tyr
                245                 250                 255
Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly Val Pro Glu
            260                 265                 270
Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser Gln Gly Tyr
        275                 280                 285
Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe Val Lys Leu
    290                 295                 300
His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly Arg Pro Leu
305                 310                 315                 320
Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly Thr Pro Val
                325                 330                 335
Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu Gly Thr Ala
            340                 345                 350
Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly Met His Ile
        355                 360                 365
Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val Glu Asn Leu
    370                 375                 380
Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala Pro Ser Gly
385                 390                 395                 400
Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg Ser Cys Tyr
                405                 410                 415
Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp Pro Gly Thr
            420                 425                 430
His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Thr Ala Leu Ile
        435                 440                 445
Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu Ser Ser Arg Asp Thr
    450                 455                 460
Gly Arg Ala Leu Gln Val His Met Gly Ser Met Ser Pro Pro Ser Ala
465                 470                 475                 480
Trp Pro Cys Val Leu Asp Gly Pro Glu Thr Arg Gln Val Leu Cys Gln
                485                 490                 495
Pro Pro Lys Pro Cys Val His Ser His Ala His Met Glu Glu Cys Leu
            500                 505                 510
Ser Ala Gly Leu Gln Cys Pro His Pro His Leu Leu Leu Val His Ser
        515                 520                 525
Cys Phe Ile Pro Ala Ser Gly Leu Gly Val Pro Ser Gln Leu Pro His
    530                 535                 540
Pro Ile Trp Ser Ser Ser Pro Ala Pro Cys Gly Asp Leu Phe Val Lys
545                 550                 555                 560
Ser Leu Gly Thr Gly Gln Pro Gly Glu Val Arg Leu His His Ser Pro
```

```
                565                 570                 575
Pro Leu Pro Ser Cys Val Ala Leu Val Asn Gln Pro Pro His Ser Pro
            580                 585                 590
Trp Ser Phe Ser Arg Val
        595
```

<210> 42
<211> 2235
<212> DNA
<213> homo sapiens

<400> 42

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atgcaaagca aatgtcatca aaaagggaaa aacaaccaga cggagtgctt taaccatgtg      60
cggttcctgc agcggctcaa ttctacccac ctctatgcat gtgggactca cgccttccag     120
cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg     180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc     240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac     300
ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg     360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac     420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc     480
agtcaccgtg tggcccgtgt ggctcgygtc tgcaagggag acctgggagg gaagaagatc     540
ctgcagaaga agtggacttc cttcctgaaa gcccgtctca tctgccacat tccactgtat     600
gagacactgc gtggggtctg cagcctggat gctgaaacct caagccgtac acacttctat     660
gcagccttca cgctgagcac acagtggaag accctggagg cctcagccat ctgccgctat     720
gacctggcag agatccaggc tgtctttgca ggaccctata tggaatacca ggatggttcc     780
cggcgctggg gtcgctatga gggtggggtg cctgagcccc ggcctggctc gtgtatcaca     840
gattcattgc gcagccaagg ctacaattca tcccaagact tgccatccct ggtcctggac     900
tttgtaaagt tgcacccact gatggctcgg cccgttgtgc ccacacgtgg acggcccctg     960
ctgctcaagc gcaacatacg ctacacacac cttacaggga cacctgtcac cacgcctgct    1020
ggacctacct atgacctgct ctttctgggc acagctgatg gctggatcca caaggccgta    1080
gtcctgggct ctgggatgca cattattgaa gagacacaag tgttcaggga gtcccagtct    1140
gtggaaaatc tagtcatctc tctattgcag cacagcctct atgtgggggc tcctagcgga    1200
gtcatccagc taccactctc cagctgctcc cgctaccgat cctgctatga ctgcatcttg    1260
gcccgagacc cctactgtgg ctgggaccct ggcacccatg cctgcgcagc agccaccacc    1320
atagccaaca ggtcccaggg aagcaggaca gcactgatac aggacataga gagaggaaat    1380
cgaggctgtg agagcagcag ggatacaggg ccaccaccac cactgaagac ccgctctgtg    1440
ctccggggtg atgatgtcct cctgccctgt gaccagccat ccaacctggc ccgggccttg    1500
tggctactca atgggagcat gggcctgagc gatgggcagg gtggctaccg tgtgggcgtg    1560
gacgggctgc tggttacaga tgcacagcct gagcacagtg gcaactatgg ctgctatgcc    1620
gaggaaaatg gcctccgcac cctgctggcc tcctatagtc tcacagtccg gccagccact    1680
cctgccccag ctccaaaagc ccctgccaca cctggggcac agctggcacc tgatgtgaga    1740
ctgctctatg tgctagccat tgccgcgctt ggtggccyct gcctcatcct ggcctcctcc    1800
ctcctctatg tggcctgtct gcgggaaggc agacgagggc gccgacggaa atactcactg    1860
ggtcgggcca gccgggcagg aggatctgcg gtgcaactgc agacagtctc aggccagtgt    1920
cctggagagg aagatgaggg tgatgatgag ggggctgggg gcctggaggg cagctgtctc    1980
cagatcatcc ctggggaggg agccccagcc ccaccacccc caccgccccc accgccaccg    2040
gctgagctga ccaatggctt ggtggcactg cccagccggc tgcggaggat gaatggcaat    2100
agctatgtgc ttctgaggca gagcaacaat ggagtaccag cagggccctg ctccttcgcc    2160
gaggaactca gccgcatcct ggaaaaaagg aagcacacgc agctcgtgga gcagctagat    2220
gagagctctg tctga                                                    2235
```

<210> 43
<211> 744
<212> PRT
<213> homo sapiens

<400> 43

```
Met Gln Ser Lys Cys His Gln Lys Gly Lys Asn Asn Gln Thr Glu Cys
 1               5                  10                  15
Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr His Leu Tyr
            20                  25                  30
Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala Ile Asp Ala
        35                  40                  45
Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys Glu Lys Cys
    50                  55                  60
Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile Asp Gly Gly
65                  70                  75                  80
Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro Asp Ile Arg
                85                  90                  95
Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr Pro Met His
            100                 105                 110
Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val Arg Glu Ser
        115                 120                 125
Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr Phe Phe Thr
    130                 135                 140
Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln Ser Arg Ser
145                 150                 155                 160
Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly Asp Leu Gly
                165                 170                 175
Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu Lys Ala Arg
            180                 185                 190
Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly Val Cys Ser
        195                 200                 205
Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala Ala Phe Thr
    210                 215                 220
Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile Cys Arg Tyr
225                 230                 235                 240
Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr Met Glu Tyr
                245                 250                 255
Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly Val Pro Glu
            260                 265                 270
Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser Gln Gly Tyr
        275                 280                 285
Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe Val Lys Leu
    290                 295                 300
His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly Arg Pro Leu
305                 310                 315                 320
Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly Thr Pro Val
                325                 330                 335
Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu Gly Thr Ala
            340                 345                 350
Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly Met His Ile
        355                 360                 365
Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val Glu Asn Leu
    370                 375                 380
Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala Pro Ser Gly
385                 390                 395                 400
Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg Ser Cys Tyr
                405                 410                 415
Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp Pro Gly Thr
            420                 425                 430
His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Ser Gln Gly Ser
```

```
        435                 440                 445
Arg Thr Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu
    450                 455                 460
Ser Ser Arg Asp Thr Gly Pro Pro Pro Leu Lys Thr Arg Ser Val
465                 470                 475                 480
Leu Arg Gly Asp Asp Val Leu Leu Pro Cys Asp Gln Pro Ser Asn Leu
                485                 490                 495
Ala Arg Ala Leu Trp Leu Leu Asn Gly Ser Met Gly Leu Ser Asp Gly
            500                 505                 510
Gln Gly Gly Tyr Arg Val Gly Val Asp Gly Leu Leu Val Thr Asp Ala
        515                 520                 525
Gln Pro Glu His Ser Gly Asn Tyr Gly Cys Tyr Ala Glu Glu Asn Gly
    530                 535                 540
Leu Arg Thr Leu Leu Ala Ser Tyr Ser Leu Thr Val Arg Pro Ala Thr
545                 550                 555                 560
Pro Ala Pro Ala Pro Lys Ala Pro Ala Thr Pro Gly Ala Gln Leu Ala
                565                 570                 575
Pro Asp Val Arg Leu Leu Tyr Val Leu Ala Ile Ala Ala Leu Gly Gly
            580                 585                 590
Leu Cys Leu Ile Leu Ala Ser Ser Leu Leu Tyr Val Ala Cys Leu Arg
        595                 600                 605
Glu Gly Arg Arg Gly Arg Arg Arg Lys Tyr Ser Leu Gly Arg Ala Ser
    610                 615                 620
Arg Ala Gly Gly Ser Ala Val Gln Leu Gln Thr Val Ser Gly Gln Cys
625                 630                 635                 640
Pro Gly Glu Glu Asp Glu Gly Asp Asp Glu Gly Ala Gly Gly Leu Glu
                645                 650                 655
Gly Ser Cys Leu Gln Ile Ile Pro Gly Glu Gly Ala Pro Ala Pro Pro
            660                 665                 670
Pro Pro Pro Pro Pro Pro Pro Pro Ala Glu Leu Thr Asn Gly Leu Val
        675                 680                 685
Ala Leu Pro Ser Arg Leu Arg Arg Met Asn Gly Asn Ser Tyr Val Leu
    690                 695                 700
Leu Arg Gln Ser Asn Asn Gly Val Pro Ala Gly Pro Cys Ser Phe Ala
705                 710                 715                 720
Glu Glu Leu Ser Arg Ile Leu Glu Lys Arg Lys His Thr Gln Leu Val
                725                 730                 735
Glu Gln Leu Asp Glu Ser Ser Val
            740
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<210> 44
<211> 2220
<212> DNA
<213> homo sapiens

<400> 44

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cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg     180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc     240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac     300
ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg     360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac     420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc     480
agtcaccgtg tggcccgtgt ggctcgygtc tgcaagggag acctgggagg gaagaagatc     540
ctgcagaaga agtggacttc cttcctgaaa gcccgtctca tctgccacat tccactgtat     600
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```
Ala Val Gln Leu Gln Thr Val Ser Gly Gln Cys Pro Gly Glu Glu Asp
625                 630                 635                 640
Glu Gly Asp Asp Glu Gly Ala Gly Gly Leu Glu Gly Ser Cys Leu Gln
                645                 650                 655
Ile Ile Pro Gly Glu Gly Ala Pro Ala Pro Pro Pro Pro Pro Pro Pro
            660                 665                 670
Pro Pro Pro Ala Glu Leu Thr Asn Gly Leu Val Ala Leu Pro Ser Arg
        675                 680                 685
Leu Arg Arg Met Asn Gly Asn Ser Tyr Val Leu Leu Arg Gln Ser Asn
    690                 695                 700
Asn Gly Val Pro Ala Gly Pro Cys Ser Phe Ala Glu Glu Leu Ser Arg
705                 710                 715                 720
Ile Leu Glu Lys Arg Lys His Thr Gln Leu Val Glu Gln Leu Asp Glu
                725                 730                 735
Ser Ser Val
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<210> 46
<211> 2316
<212> DNA
<213> homo sapiens

<400> 46

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cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg     180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc     240
ctctacacag ccactaggta tgaattccgg agcattcctg acatccgccg gagccgccac     300
ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg     360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac     420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc     480
agtcaccgtg tggcccgtgt ggctcgygtc tgcaagggag acctgggagg gaagaagatc     540
ctgcagaaga agtggacttc cttcctgaaa gcccgtctca tctgccacat tccactgtat     600
gagacactgc gtggggtctg cagcctggat gctgaaacct caagccgtac acacttctat     660
gcagccttca cgctgagcac acagtggaag accctggagg cctcagccat ctgccgctat     720
gacctggcag agatccaggc tgtctttgca ggaccctata tggaatacca ggatggttcc     780
cggcgctggg gtcgctatga gggtggggtg cctgagcccc ggcctggctc gtgtatcaca     840
gattcattgc gcagccaagg ctacaattca tcccaagact tgccatccct ggtcctggac     900
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ctgctcaagc gcaacatacg ctacacacac cttacaggga cacctgtcac cacgcctgct    1020
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gtcctgggct ctgggatgca cattattgaa gagacacaag tgttcaggga gtcccagtct    1140
gtggaaaatc tagtcatctc tctattgcag cacagcctct atgtgggggc tcctagcgga    1200
gtcatccagc taccactctc cagctgctcc cgctaccgat cctgctatga ctgcatcttg    1260
gcccgagacc cctactgtgg ctgggaccct ggcacccatg cctgcgcagc agccaccacc    1320
atagccaaca ggtcccaggg aagcaggaca gcactgatac aggacataga gagaggaaat    1380
cgaggctgtg agagcagcag ggatacaggg ccaccaccac cactgaagac ccgctctgtg    1440
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tggctactca atgggagcat gggcctgagc gatgggcagg gtggctaccg tgtgggcgtg    1560
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ctcctctatg tggcctgtct gcgggaaggc agacgagggc gccgacggaa atactcactg    1860
ggtcgggcca gccgggcagg aggatctgcg gtgcaactgc agacagtctc aggcagggct    1920
ctgcaggtcc atatgggctc aatgtcacca ccctctgcat ggccctgtgt gctggatggt    1980
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cctgaaacca gacaagtcct ctgccagcca cctaagccct gcgtacattc acatgcacac 2040
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tcttgtttca tccctgcttc tggacttggg gtaccctccc aattgccaca tcctatctgg 2160
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<210> 47
<211> 771
<212> PRT
<213> homo sapiens

<400> 47

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			20					25					30		
Ala	Cys	Gly	Thr	His	Ala	Phe	Gln	Pro	Leu	Cys	Ala	Ala	Ile	Asp	Ala
		35					40					45			
Glu	Ala	Phe	Thr	Leu	Pro	Thr	Ser	Phe	Glu	Glu	Gly	Lys	Glu	Lys	Cys
	50					55					60				
Pro	Tyr	Asp	Pro	Ala	Arg	Gly	Phe	Thr	Gly	Leu	Ile	Ile	Asp	Gly	Gly
65					70					75					80
Leu	Tyr	Thr	Ala	Thr	Arg	Tyr	Glu	Phe	Arg	Ser	Ile	Pro	Asp	Ile	Arg
				85					90					95	
Arg	Ser	Arg	His	Pro	His	Ser	Leu	Arg	Thr	Glu	Glu	Thr	Pro	Met	His
			100					105					110		
Trp	Leu	Asn	Asp	Ala	Glu	Phe	Val	Phe	Ser	Val	Leu	Val	Arg	Glu	Ser
		115					120					125			
Lys	Ala	Ser	Ala	Val	Gly	Asp	Asp	Asp	Lys	Val	Tyr	Tyr	Phe	Phe	Thr
	130					135					140				
Glu	Arg	Ala	Thr	Glu	Glu	Gly	Ser	Gly	Ser	Phe	Thr	Gln	Ser	Arg	Ser
145					150					155					160
Ser	His	Arg	Val	Ala	Arg	Val	Ala	Arg	Val	Cys	Lys	Gly	Asp	Leu	Gly
				165					170					175	
Gly	Lys	Lys	Ile	Leu	Gln	Lys	Lys	Trp	Thr	Ser	Phe	Leu	Lys	Ala	Arg
			180					185					190		
Leu	Ile	Cys	His	Ile	Pro	Leu	Tyr	Glu	Thr	Leu	Arg	Gly	Val	Cys	Ser
		195					200					205			
Leu	Asp	Ala	Glu	Thr	Ser	Ser	Arg	Thr	His	Phe	Tyr	Ala	Ala	Phe	Thr
	210					215					220				
Leu	Ser	Thr	Gln	Trp	Lys	Thr	Leu	Glu	Ala	Ser	Ala	Ile	Cys	Arg	Tyr
225					230					235					240
Asp	Leu	Ala	Glu	Ile	Gln	Ala	Val	Phe	Ala	Gly	Pro	Tyr	Met	Glu	Tyr
				245					250					255	
Gln	Asp	Gly	Ser	Arg	Arg	Trp	Gly	Arg	Tyr	Glu	Gly	Gly	Val	Pro	Glu
			260					265					270		
Pro	Arg	Pro	Gly	Ser	Cys	Ile	Thr	Asp	Ser	Leu	Arg	Ser	Gln	Gly	Tyr
		275					280					285			
Asn	Ser	Ser	Gln	Asp	Leu	Pro	Ser	Leu	Val	Leu	Asp	Phe	Val	Lys	Leu
	290					295					300				
His	Pro	Leu	Met	Ala	Arg	Pro	Val	Val	Pro	Thr	Arg	Gly	Arg	Pro	Leu
305					310					315					320
Leu	Leu	Lys	Arg	Asn	Ile	Arg	Tyr	Thr	His	Leu	Thr	Gly	Thr	Pro	Val
				325					330					335	
Thr	Thr	Pro	Ala	Gly	Pro	Thr	Tyr	Asp	Leu	Leu	Phe	Leu	Gly	Thr	Ala

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                340                 345                 350
Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly Met His Ile
        355                 360                 365
Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val Glu Asn Leu
    370                 375                 380
Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala Pro Ser Gly
385                 390                 395                 400
Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg Ser Cys Tyr
                405                 410                 415
Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp Pro Gly Thr
            420                 425                 430
His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Ser Gln Gly Ser
        435                 440                 445
Arg Thr Ala Leu Ile Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu
    450                 455                 460
Ser Ser Arg Asp Thr Gly Pro Pro Pro Pro Leu Lys Thr Arg Ser Val
465                 470                 475                 480
Leu Arg Gly Asp Asp Val Leu Leu Pro Cys Asp Gln Pro Ser Asn Leu
                485                 490                 495
Ala Arg Ala Leu Trp Leu Leu Asn Gly Ser Met Gly Leu Ser Asp Gly
            500                 505                 510
Gln Gly Gly Tyr Arg Val Gly Val Asp Gly Leu Leu Val Thr Asp Ala
        515                 520                 525
Gln Pro Glu His Ser Gly Asn Tyr Gly Cys Tyr Ala Glu Glu Asn Gly
    530                 535                 540
Leu Arg Thr Leu Leu Ala Ser Tyr Ser Leu Thr Val Arg Pro Ala Thr
545                 550                 555                 560
Pro Ala Pro Ala Pro Lys Ala Pro Ala Thr Pro Gly Ala Gln Leu Ala
                565                 570                 575
Pro Asp Val Arg Leu Leu Tyr Val Leu Ala Ile Ala Ala Leu Gly Gly
            580                 585                 590
Leu Cys Leu Ile Leu Ala Ser Ser Leu Leu Tyr Val Ala Cys Leu Arg
        595                 600                 605
Glu Gly Arg Arg Gly Arg Arg Arg Lys Tyr Ser Leu Gly Arg Ala Ser
    610                 615                 620
Arg Ala Gly Gly Ser Ala Val Gln Leu Gln Thr Val Ser Gly Arg Ala
625                 630                 635                 640
Leu Gln Val His Met Gly Ser Met Ser Pro Pro Ser Ala Trp Pro Cys
                645                 650                 655
Val Leu Asp Gly Pro Glu Thr Arg Gln Val Leu Cys Gln Pro Pro Lys
            660                 665                 670
Pro Cys Val His Ser His Ala His Met Glu Glu Cys Leu Ser Ala Gly
        675                 680                 685
Leu Gln Cys Pro His Pro His Leu Leu Leu Val His Ser Cys Phe Ile
    690                 695                 700
Pro Ala Ser Gly Leu Gly Val Pro Ser Gln Leu Pro His Pro Ile Trp
705                 710                 715                 720
Ser Ser Ser Pro Ala Pro Cys Gly Asp Leu Phe Val Lys Ser Leu Gly
                725                 730                 735
Thr Gly Gln Pro Gly Glu Val Arg Leu His His Ser Pro Pro Leu Pro
            740                 745                 750
Ser Cys Val Ala Leu Val Asn Gln Pro Pro His Ser Pro Trp Ser Phe
        755                 760                 765
Ser Arg Val
    770
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<210> 48
<211> 2301
<212> DNA
<213> homo sapiens

<400> 48
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cccctctgtg cagccattga tgctgaggcc ttcaccttgc caaccagctt cgaggagggg 180
aaggagaagt gtccttatga cccagcccgt ggcttcacag gcctcatcat tgatggaggc 240
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ccacactccc tgagaactga ggagacacca atgcattggc tcaatgatgc ggagtttgtg 360
ttctccgtcc tcgtgcggga gagcaaggcc agtgcagtgg gtgatgatga caaggtgtac 420
tacttcttca cggagcgtgc cactgaggag ggctctggca gcttcactca gagccgcagc 480
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ccatgtggtg acctctttgt caagagcttg ggaacgggcc agcctgggga ggtaagactg 2220
catcactccc ctcctctccc ttcctgtgtg gcccttgtga atcagcctcc ccactctcct 2280
tggtcattct caagagtatg a 2301

<210> 49
<211> 766
<212> PRT
<213> homo sapiens

<400> 49
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Phe Asn His Val Arg Phe Leu Gln Arg Leu Asn Ser Thr His Leu Tyr
            20   25   30

Ala Cys Gly Thr His Ala Phe Gln Pro Leu Cys Ala Ala Ile Asp Ala
35 40 45
Glu Ala Phe Thr Leu Pro Thr Ser Phe Glu Glu Gly Lys Glu Lys Cys
50 55 60
Pro Tyr Asp Pro Ala Arg Gly Phe Thr Gly Leu Ile Ile Asp Gly Gly
65 70 75 80
Leu Tyr Thr Ala Thr Arg Tyr Glu Phe Arg Ser Ile Pro Asp Ile Arg
85 90 95
Arg Ser Arg His Pro His Ser Leu Arg Thr Glu Glu Thr Pro Met His
100 105 110
Trp Leu Asn Asp Ala Glu Phe Val Phe Ser Val Leu Val Arg Glu Ser
115 120 125
Lys Ala Ser Ala Val Gly Asp Asp Asp Lys Val Tyr Tyr Phe Phe Thr
130 135 140
Glu Arg Ala Thr Glu Glu Gly Ser Gly Ser Phe Thr Gln Ser Arg Ser
145 150 155 160
Ser His Arg Val Ala Arg Val Ala Arg Val Cys Lys Gly Asp Leu Gly
165 170 175
Gly Lys Lys Ile Leu Gln Lys Lys Trp Thr Ser Phe Leu Lys Ala Arg
180 185 190
Leu Ile Cys His Ile Pro Leu Tyr Glu Thr Leu Arg Gly Val Cys Ser
195 200 205
Leu Asp Ala Glu Thr Ser Ser Arg Thr His Phe Tyr Ala Ala Phe Thr
210 215 220
Leu Ser Thr Gln Trp Lys Thr Leu Glu Ala Ser Ala Ile Cys Arg Tyr
225 230 235 240
Asp Leu Ala Glu Ile Gln Ala Val Phe Ala Gly Pro Tyr Met Glu Tyr
245 250 255
Gln Asp Gly Ser Arg Arg Trp Gly Arg Tyr Glu Gly Gly Val Pro Glu
260 265 270
Pro Arg Pro Gly Ser Cys Ile Thr Asp Ser Leu Arg Ser Gln Gly Tyr
275 280 285
Asn Ser Ser Gln Asp Leu Pro Ser Leu Val Leu Asp Phe Val Lys Leu
290 295 300
His Pro Leu Met Ala Arg Pro Val Val Pro Thr Arg Gly Arg Pro Leu
305 310 315 320
Leu Leu Lys Arg Asn Ile Arg Tyr Thr His Leu Thr Gly Thr Pro Val
325 330 335
Thr Thr Pro Ala Gly Pro Thr Tyr Asp Leu Leu Phe Leu Gly Thr Ala
340 345 350
Asp Gly Trp Ile His Lys Ala Val Val Leu Gly Ser Gly Met His Ile
355 360 365
Ile Glu Glu Thr Gln Val Phe Arg Glu Ser Gln Ser Val Glu Asn Leu
370 375 380
Val Ile Ser Leu Leu Gln His Ser Leu Tyr Val Gly Ala Pro Ser Gly
385 390 395 400
Val Ile Gln Leu Pro Leu Ser Ser Cys Ser Arg Tyr Arg Ser Cys Tyr
405 410 415
Asp Cys Ile Leu Ala Arg Asp Pro Tyr Cys Gly Trp Asp Pro Gly Thr
420 425 430
His Ala Cys Ala Ala Ala Thr Thr Ile Ala Asn Arg Thr Ala Leu Ile
435 440 445
Gln Asp Ile Glu Arg Gly Asn Arg Gly Cys Glu Ser Ser Arg Asp Thr
450 455 460
Gly Pro Pro Pro Pro Leu Lys Thr Arg Ser Val Leu Arg Gly Asp Asp
465 470 475 480

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Val Leu Leu Pro Cys Asp Gln Pro Ser Asn Leu Ala Arg Ala Leu Trp
                485                 490                 495
Leu Leu Asn Gly Ser Met Gly Leu Ser Asp Gly Gln Gly Gly Tyr Arg
            500                 505                 510
Val Gly Val Asp Gly Leu Leu Val Thr Asp Ala Gln Pro Glu His Ser
        515                 520                 525
Gly Asn Tyr Gly Cys Tyr Ala Glu Glu Asn Gly Leu Arg Thr Leu Leu
    530                 535                 540
Ala Ser Tyr Ser Leu Thr Val Arg Pro Ala Thr Pro Ala Pro Ala Pro
545                 550                 555                 560
Lys Ala Pro Ala Thr Pro Gly Ala Gln Leu Ala Pro Asp Val Arg Leu
                565                 570                 575
Leu Tyr Val Leu Ala Ile Ala Ala Leu Gly Gly Leu Cys Leu Ile Leu
            580                 585                 590
Ala Ser Ser Leu Leu Tyr Val Ala Cys Leu Arg Glu Gly Arg Arg Gly
        595                 600                 605
Arg Arg Arg Lys Tyr Ser Leu Gly Arg Ala Ser Arg Ala Gly Gly Ser
    610                 615                 620
Ala Val Gln Leu Gln Thr Val Ser Gly Arg Ala Leu Gln Val His Met
625                 630                 635                 640
Gly Ser Met Ser Pro Pro Ser Ala Trp Pro Cys Val Leu Asp Gly Pro
                645                 650                 655
Glu Thr Arg Gln Val Leu Cys Gln Pro Pro Lys Pro Cys Val His Ser
            660                 665                 670
His Ala His Met Glu Glu Cys Leu Ser Ala Gly Leu Gln Cys Pro His
        675                 680                 685
Pro His Leu Leu Leu Val His Ser Cys Phe Ile Pro Ala Ser Gly Leu
    690                 695                 700
Gly Val Pro Ser Gln Leu Pro His Pro Ile Trp Ser Ser Ser Pro Ala
705                 710                 715                 720
Pro Cys Gly Asp Leu Phe Val Lys Ser Leu Gly Thr Gly Gln Pro Gly
                725                 730                 735
Glu Val Arg Leu His His Ser Pro Pro Leu Pro Ser Cys Val Ala Leu
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Val Asn Gln Pro Pro His Ser Pro Trp Ser Phe Ser Arg Val
        755                 760                 765
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<210> 50
<211> 2951
<212> DNA
<213> homo sapiens

<400> 50

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ccctctaga acttcacaac tccctctcac catggagttt gcatttgatg cagaaaggca      180
tgtgatccct ccctccttct gacctcttag ctggggattc catggccaca caaccctgtg     240
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actcaacact gctgctggag gaggcctcag caaggctgct ggtgggagcc cgaggtgccc     660
tgttctctct cagtgccaac gacataggag atggggctca caaagagatc cactgggaag     720
cctccccaga gatgcaaagc aaatgtcatc aaaaagggaa aaacaaccag acggagtgct     780
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